QL
A36
1848

A

CATALOGUE

OF

THE MOLLUSCA

Division of Mollusca
Sectional Library

OF

NORTHUMBERLAND AND DURHAM.

BY

JOSHUA ALDER.

[FROM THE TRANSACTIONS OF THE TYNESIDE NATURALISTS' FIELD CLUB.]

NEWCASTLE UPON TYNE:
ROBERT CURRIE & CO., 15, GREY STREET.

LONDON:
EDWARDS & HUGHES, 12, AVE MARIE LANE.

1848.

A36
1848
Moll.

ISAAC LEA COLLECTION.

Isaac Lea Esq^r
Philadelphia
with the Author's Compl^ts

A

CATALOGUE

OF

THE MOLLUSCA

Division of Mollusk
Sectional Library

OF

NORTHUMBERLAND AND DURHAM.

LIBRARY U.S. NATIONAL MUSEUM
34798
JAN 8 1890
SMITHSONIAN INSTITUTION

BY

JOSHUA ALDER.

[FROM THE TRANSACTIONS OF THE TYNESIDE NATURALISTS' FIELD CLUB.]

NEWCASTLE UPON TYNE:
ROBERT CURRIE & CO., 15, GREY STREET.
LONDON:
EDWARDS & HUGHES, 12, AVE MARIE LANE.

1848.

The preparation of this Catalogue was entrusted to a Sub-committee of the Tyneside Naturalists' Field Club, consisting of Joseph Harrison Fryer, Albany Hancock, and Joshua Alder, and has been drawn up by the latter with the assistance of the two former. The names of the Sub-committee are indicated in the Catalogue by their initials.

NEWCASTLE: PRINTED BY T. AND J. HODGSON, UNION STREET.

A

CATALOGUE OF THE MOLLUSCA

OF

NORTHUMBERLAND AND DURHAM.

Several partial notices of the Mollusca, or, to speak more correctly, of the Shells of Northumberland and Durham, have from time to time appeared. The earliest is that of Wallis in the "Natural History and Antiquities of Northumberland," published in 1769. This work contains an account of 45 species and varieties, rather vaguely designated, after the fashion of the older naturalists, but most of which can be easily recognised. They consist principally of the most common and conspicuous species. No further contributions to the conchology of these counties appeared till 1816, when Sir Cuthbert Sharp published in his "History of Hartlepool," a pretty extensive list of the shells of that locality. This list appears to have been very carefully drawn up according to the best information of the time, but a few species have inadvertently been admitted into it, such as *Venus chione*, *Cardium aculeatum*, *Buccinum lineatum*, and *Strombus costatus*, which are certainly not inhabitants of our coast, and must either have come there by chance, or, what is more probable, other species somewhat similar in appearance have been taken for them. Several species in addition to Sir Cuthbert Sharp's list were given by Mr. Hogg, in his "Natural History of the Vicinity of Stockton." In 1822, Mr. Winch published a Catalogue of the Shells found at Lindisfarne, in the "Annals of Philosophy"; stated to be principally furnished by a lady. It was afterwards re-

printed in Raine's "History of North Durham." Here also one or two species appear to have been included by mistake, but, upon the whole, it is a pretty correct enumeration of the principal shells found on that part of the coast. A "Catalogue of the Land and Fresh-water Mollusca of the vicinity of Newcastle," by the writer of this notice, was published in our "Natural History Society's Transactions" in 1830, to which a Supplement was added in 1838. More recently, the contributions of Mr. William King, late curator of the Newcastle Museum, and of Mr. Richard Howse, to the "Annals of Natural History" have illustrated several of our rarer species. The excellent papers of Dr. Johnston on the Mollusca of Berwick Bay, published in the "Berwickshire Club Proceedings," may also be mentioned as coming partially within the limits of this Catalogue.

So much having already appeared in this department, it may be supposed that little remains to be done in order to give a complete list of the Mollusca of the two counties. It will be observed, however, that scarcely any notices of the naked or shell-less Mollusca have been included in these contributions, and that in the lists of shells, the minute and less conspicuous kinds, which form a considerable portion of the whole, have been generally overlooked. We have been anxious, too, rather to give the result of our own observations, and to verify by personal observation the species already published, than to make a compilation from old materials, did these contain a greater proportion of our Molluscan Fauna than they really do. The attention that we have paid for several years to the productions of this coast, together with the kind assistance of our friends, has enabled us to add largely to the materials already published.

The arrangement here adopted is that of Cuvier ; but so much has been done since his time, especially towards the attainment of a knowledge of the animal inhabitants of shells, upon which any arrangements claiming to be natural must necessarily be based, that we have been obliged to make several modifications to meet the requirements of modern science. We are fully aware of the imperfections of many parts of this arrangement as it now stands, but we prefer, in the present transition state of the

science, to adhere in the main to some system already established, rather than to introduce changes that may not stand the test of further experience.

A spirit of rigid criticism is now abroad on the nomenclature of natural history, which makes it necessary to examine into the priority of each individual synonym in the genera and species. This we have done to the best of our ability and means; and we must acknowledge the great assistance we have derived in this respect from the excellent little Synopsis of the Swedish and Norwegian Mollusca lately published by Professor Lovén, of Stockholm, entitled "Index Molluscorum litora Scandinaviæ Occidentalia habitantium." as well as from his obliging communications. Our acknowledgments are equally due to Mr. Sylvanus Hanley for his kind assistance in identifying several of the Linnæan species; an assistance which his laborious and critical examination of the Linnæan Cabinet renders him peculiarly able to afford.*

Had there been any work which we could have taken as a text book, our task in drawing up this Catalogue would have been comparatively light, but at present no such work on British Mollusca exists, though the desideratum is in the course of being supplied by the "History of British Mollusca and their Shells" by Professor E. Forbes and Mr. Hanley, one or two parts of which have already appeared; but as it will not be completed for three years, we shall not be able to avail ourselves of it on the present occasion.

As our Catalogue is exclusively confined to the Mollusca, three classes of Testaceous animals that have usually appeared in British works on shells do not find a place in these pages; these are, the *Foraminifera*, the *Cirrhipoda*, and the *Testaceous Annelida*. Modern investigations have proved that these belong to entirely different departments of the animal kingdom, to which they must now be assigned—the first to *Zoophytes*, the second to *Crustacea*, and the third to *Annelida*.

* Mr. Hanley is about to publish the results of this examination in a work exclusively devoted to the species preserved in the cabinet of Linnæus, the value of which every naturalist must appreciate.

But if our Catalogue exclude some of the objects usually associated with the Mollusca, it will, on the other hand, be found more than usually extensive in two classes, which have seldom obtained a place in our local lists, namely, the *Nudibranchiata* and the *Tunicata*. In the latter so little has hitherto been done that, even with the kind assistance of of our friend Professor Edward Forbes, we have found the greatest difficulty in referring our species to any of those already described, and it has consequently become necessary to publish descriptions of many of them.

The coast over which our observations extend, is in some respects not particularly favourable for the production of molluscous animals: possessing none of those sinuosities and sheltered bays within which these animals generally find the conditions most favourable to their development. The coast line of Northumberland and Durham is, on the contrary, bare and exposed, and the sea beats upon its shores much more roughly than in most of the localities celebrated for their marine productions. It is nevertheless not without some advantages. Its extensive sands are unmixed with shingle, and consequently afford a suitable habitation for many bivalves; which, however, are nearly extirpated on some of the most frequented parts of the coast. From the nature of the strata, too, the rocks do not dip very abruptly into the sea, but run out at a very slight inclination, leaving a great extent of surface at low tides, accessible to the naturalist, and not unproductive of marine animals. In the inland portion of the country the surface is a good deal diversified, but upon the whole it is rather too hilly, particularly in the western parts, to be very productive of the land and fresh-water Mollusca, which are generally thinly scattered in upland and exposed situations. The vallies, however, produce not an inconsiderable number of the land species: these abound most on limestone, and a few species are nearly confined to that description of rock. Owing to the small extent of marshes and ditches, in addition to the lower temperature, the fresh-water species are much less abundant here than in the south of England.

The generalizations of Professor E. Forbes, in his able Paper on the Northern Drift, published in the "Memoirs of the Geological

Survey of Great Britain," have demonstrated the use of local Faunas like the present, in furnishing materials for working out some of the most interesting problems that Natural History affords ; but for the true solution of problems of this kind, it is not only necessary that local Catalogues should be as complete as possible in the productions of the district, but that care should also be taken not to introduce species by mistake, or on imperfect evidence, which might give a false idea of their geographical range, and vitiate the generalizations founded upon them. Impressed with this conviction, we have been particularly careful in scrutinizing the earlier published Catalogues, and comparing them with the geographical limits of species as far as already known ; in doing this, we have been led to reject some species only found in a dead state, which deference to previous authorities might otherwise have induced us to retain.

One source of error, which, without great care, is likely to vitiate our Fauna, is the quantity of shells brought in ballast by the coal ships. This ballast, dredged in the rivers and harbours of the south of England, is, in consequence of the dues payable for its deposit on shore, frequently cast overboard at sea, and shells from it are occasionally washed up on the adjoining sands. We have endeavoured to ascertain as far as possible what shells are attributable to this source, but we cannot be sure that in every case we have succeeded.

The exposed nature of the coast is not favourable to the use of the dredge, and consequently very few explorations have been made with that useful aid to the naturalist. Our own exploits in that way, we must confess to have been nearly complete failures, owing principally to our inability to stand the exposure and motion of an open sea. Mr. King and Mr. Howse have made attempts at deep water dredging, on the cod-fishing grounds at a considerable distance from the shore, the results of which have appeared in the "Annals of Natural History." Though these can scarcely be called successful, there cannot be a doubt that under more favourable circumstances excellent results might be obtained from deep-water dredging off our coast, but the expense and discomfort of the undertaking, as prosecuted in the fishing

boats, together with the great uncertainty of the weather when the grounds are reached, are drawbacks which will prevent its being often attempted. A trial made by Mr. Howse of dredging in fifteen to twenty fathoms water, undertaken for the purpose of gaining information for this Catalogue, has been attended with better success, as the notices of species obtained by it will shew.

The Molluscan Fauna of the coast of Northumberland and Durham partakes, as might be expected, much more of the characters of that of northern Europe than of more southern latitudes. On comparing it with the "Index Molluscorum" of Lovén, we find that about half the species of our Catalogue are inhabitants of the Scandinavian shores, whilst scarcely a fifth part are to be found in the Mediterranean. In both cases the greater proportion are bivalves. Dr. Philippi enumerates about one hundred and fifty* marine species, common to Britain and Sicily, but not more than a third of them reach our north-eastern shores, and it is curious that none of the latter are really southern forms, they being nearly all of a cosmopolite character and equally common to the north of Europe. Compared with the British Fauna our coast affords more than half the number of species found on the shores of Great Britain and Ireland. The species most characteristic of our locality are,—

Bullæa pectinata,,
quadrata,
Bulla Cranchii,
Amphisphyra hyalina,
Fusus Norvegicus,
Turtoni,
Islandicus,
Barvicensis,
Velutina plicatilis,
Scalaria Trevelyana,
Natica Montagui,
helicoides,
Grœnlandica,
Margarita helicina,
Nucula tenuis,
Modiola nigra,
Astarte compressa,
Neæra cuspidata,
Panopæa Norvegica.

* We limit our comparisons here to the marine Mollusca, as the geographical distribution of the land and fresh water species has been treated of elsewhere.—*See* Newc. Nat. Hist. Trans.—Forbes in Brit. Assoc. Report, 1839,—and Gray's Turton's Manual.

Fusus antiquus and *gracilis, Cyprina Islandica,* and *Modiola vulgaris,* from their size and frequent occurrence, form a conspicuous part of our Fauna, but their general diffusion through most of the British seas prevents our considering them as characteristic of this locality. These species, however, are rare on the southern coast of England. Of northern forms, whose absence is deserving of remark, perhaps the most conspicuous is *Lottia testudinalis,* so widely spread in northern latitudes and abundant on many parts of the west of Scotland, as well as in Ireland and Wales. This species does not appear to inhabit any part of the eastern coast of Britain. Other northern species, not uncommon on the western shores of Scotland, are also absent here; of these we may mention *Lima hyans, Terebratula caput-serpentis, Crania anomala, Pecten niveus,* and *nebulosus, Leda pygmæa* and *Margarita carnea.* The following south of England species do not occur with us,—

Bulla hydatis,
Eulima polita,
Scalaria clathratula,
Truncatella Montagui,
Ianthina fragilis,
Rissoa crenulata,
striatula,
Phasianella pullus,
Trochus umbilicatus,
striatus,
crassus,
Pleurotoma gracilis,
septangularis,
purpurea,
Fusus muricatus,
Erato lævis,
Ovula patula,
Fissurella reticulata,
Calyptræa Chinensis,
Modiola Gibbsii,
Arca lactea,
Cardium aculeatum,
exiguum.
Cytherea chione,
Tellina depressa,
Petricola irus,
Pandora obtusa,
Galeomma Turtoni,
Gastrochæna pholadia,
Pholas parva,
papyracea,
dactylus.

These may all be considered southern forms which have not reached our limits, but it is worthy of remark that some of them attain a much higher latitude on the western side of Great Britain than they do on the eastern. Many others might be added,

but our object at present is only to point out the most characteristic forms. The absence of a few species of more extensive range may be accounted for by the exposed character of the coast.

Our Catalogue contains altogether 394 species, divided as follows :—

Cephalopoda,		6
Gasteropoda—		
Nudibranchiata,	44	
Pellibranchiata,	1	
Inferobranchiata,	1	
Tectibranchiata,	13	
Pulmonata,	80	
Pectinibranchiata,	92	
Scutibranchiata,	3	
Cyclobranchiata,	12	
Cirrhobranchiata,	3	
		249
Conchifera—		
Palliobranchiata,	1	
Lamellibranchiata,	108	
		109
Tunicata,		30
		394

It may be useful to give an idea of the distribution of these into different zones of depth, which we shall now endeavour to do by enumerating the most characteristic species in each zone. We have adopted the divisions of Professor E. Forbes, contracting a little their limits, the better to adapt them to the conditions observable on our coast. They are as follows :—

1. Littoral Zone.—Between high water-mark and the low water of ordinary tides.
2. Laminarian Zone.—Between low water and 12 fathoms.
3. Coralline Zone.—From 12 to 30 fathoms.
4. Region of Deep Water.—30 fathoms and upwards.

MM. Audouin and Milne Edwards, who first proposed the distribution of marine animals into zones of depth,* have adopted much smaller divisions, and it would be easy to point out the limits of species, especially between tide marks, within much more contracted bounds, but the above broad and well-marked features are sufficient for our present purpose. Those species which from their numbers give a character to the *zone*, we have denoted by italics; those which from their rarity or partial distribution in Britain give a character to the locality, are distinguished by small capitals.

Littoral Zone.—Doris tuberculata, REPANDA, *bilamellata*, aspera; *Goniodoris nodosa;* Ancula cristata; Eolis papillosa, NANA; Odostomia spiralis; Littorina petræa, *rudissima*, rudis, *littorea*, *retusa;* Rissoa *interrupta*, ulvæ; Lacuna pallidula; *Skenea planorbis; Trochus cinerareus; Purpura lapillus;* Coriocella tentaculata; *Patella vulgata; Chiton marginatus;* Modiola discrepans; *Mytilus edulis;* Pullastra vulgaris, perforans; Kellia suborbicularis; Mya truncata, arenaria; *Pholas crispata*, candida; Cynthia rustica; Ascidia depressa; Botryllus *Schlosseri*, RUBENS; Botrylloides Leachii.

Laminarian Zone.—Dendronotus arborescens; Eolis olivacea, *coronata*, RUFIBRANCHIALIS, picta; AMPHISPHYRA HYALINA, Rissoa *parva*, *striata*, semistriata; *Lacuna vincta*, var. quadrifasciata; MARGARITA HELICINA; Turritella terebra; Fusus turricula; Pleurotoma linearis, rufa; Buccinum undatum, var. 3; *Nassa incrassata; Cypræa Europea;* VELUTINA PLICATILIS; *Lottia virginea;* Patella *pellucida*, lævis; Chiton fascicularis, RUBER; Modiola discrepans; Cardium edule; Venus gallina; Tellina *tenuis, fabula;* Syndosmya alba; Mactra stultorum; Solen siliqua, ensis.

Coralline Zone.—*Polycera Lessonii; Tritonia plebeia*; Doto fragilis, *coronata;* BULLÆA PECTINATA, QUADRATA; BULLA CRANCHII, cylindracea; SCALARIA TREVELYANA; Odostomia interstincta; Rissoa inconspicua, punctura; Trochus tumidus; *Fusus antiquus, gracilis,* PROPINQUUS, clathratus; Buccinum

* Recherches pour servir à l'Histoire Naturelle du Littoral de la France, V. i., p. 235.

undatum, var. 2 ; Natica *Alderi*, MONTAGUI ; Velutina lævigata ; Chiton cinereus ; Nucula *nucleus*, TENUIS ; Leda caudata ; Modiola *marmorata*, NIGRA ; Cardium fasciatum ; Pullastra virginea ; ASTARTE COMPRESSA ; *Psammobia Feröensis ;* Syndosmya prismatica ; Mactra elliptica ; NEÆRA CUSPIDATA ; Corbula gibba ; LYONSIA NORVEGICA ; Cynthia tuberosa, AMPULLA ; *Ascidia sordida ; Molgula arenosa ;* PELONAIA CORRUGATA.

DEEP WATER REGION.—Tritonia Hombergii ; Trochus tumidus ; Fusus antiquus, var. ; NORVEGICUS, TURTONI, ISLANDICUS, gracilis, var. ; Buccinum undatum, var. 1 ; NATICA GRŒNLANDICA ; TEREBRATULA PSITTACEA ; Modiola nigra ; Venus gallina, var. Prideauxiana ; *Cyprina Islandica ; Astarte Danmoniæ ;* PANOPÆA NORVEGICA.

Our best thanks are due to those gentlemen who have kindly furnished us with information for the following Catalogue ; more especially to the Rev. Geo. Cooper Abbes, of Cleadon ; to Mr. Wm. Backhouse, of Darlington ; to Mr. Robert Embleton, of Embleton ; and to Mr. Richard Howse.

MOLLUSCA.

* Cephala.

Class. CEPHALOPODA, *Cuvier.*

Order. DIBRANCHIATA, *Owen.*

Family. Octopodidæ, *Gray.*

1. ELEDONE, *Leach.*

1. E. ventricosa, *Grant.*

Sepia octopoda, Penn. Brit. Zool. iv. 53, t. 28, f. 44.

Octopus ventricosus, Johns. in Berw. Club Proc. i. 197.

Not uncommon. We once met with it thrown up in great abundance on Whitley sands.—*A. H.*

Dr. Johnston has given an excellent description of this species in the Berwickshire Club Proceedings.

Family. Sepiadæ, *D'Orbigny.*

2. SEPIOLA, *Leach.*

1. S. rondeletii, *Leach.*

Sepia sepiola, Penn. Brit. Zool. iv. 54, t. 29, f. 46.

Sepiola vulgaris, Johns. in Berw. C. Proc. i. 199.

Rather rare. Occasionally found in the stomachs of haddocks.

"Not unfrequently caught in the shrimp nets at Seaton."—*Mr. Hogg.*

We have only once met with the spawn of this species. Observing some capsules separately attached by short footstalks to a stone, brought in by the fishermen at Cullercoats, we carefully detached them with a penknife, and placed them in a phial of sea water. On taking a magnifier to examine our capture, we found several little *Sepiolæ* swimming briskly through the water in all directions, and the capsules lying empty at the bottom of the phial. The little creatures appeared to be of a blueish white; but, on looking again, about a minute afterwards, we found that

two of them had changed to red, and others were rapidly undergoing the same process. The change of colour in the cuttle fish tribe is well known to naturalists, and we, ourselves, had witnessed it partially in some of the larger species, but so sudden and complete a change appeared like magic, and we set about examining the process by which it was accomplished. The white individuals, we found, on looking more closely, were covered with minute spots, which appeared black from the concentration of the colouring matter, but at the will of the animal, or some other exciting cause with which we are unacquainted, they gradually enlarged until they spread out into circular red blotches, the edges of the adjoining ones nearly touching each other, and thus changing the general colour of the animal to red. By an inverse process the colour was again changed to white ; becoming red and white alternately several times during the day. Unfortunately they did not long survive. The young *Sepiolæ* on first bursting from the egg, appear to have the form and habits of the adult animal, with the exception that the tentacles are then not longer than the surrounding arms. The ink bag contained ink, which was ejected by some of the individuals before dying.

3. LOLIGO, *Lamarck.*

1. L. VULGARIS, *Lam.* (Common Calamary).

Sepia loligo, Penn. Brit. Zool. iv. 53, t. 27, f. 43.

Loligo vulgaris, Johns. in Berw. C. Proc. i. 198.

Not uncommon, Mr. Hogg states that they are much used for bait by the Hartlepool fishermen, who call them *ten-tails.*

The spawn of the Calamary is remarkable on account of its peculiar form and large size in proportion to the animal. A fine specimen of it is preserved in the Newcastle Museum. It consists of a great number of transparent gelatinous tubes, rounded at one end and attached by the other to the general mass—the whole appearing like an immense bundle of sausages. They are filled with ova, each containing a single embryo. The specimen in the Museum appears to be in the last stage of development, and the young animals may be readily seen through the transparent envelope.

2. L. SAGITTATA, *Lam.*

Loligo sagittata, Flem. Brit. Anim. 253.—Johns. in Berw. C. Proc. i. 199.

Rather rare. Frequently cast upon South Shields sands.—*Mr. R. Howse.*

3. L. MEDIA, *Linn.*

Sepia media, Penn. Brit. Zool. iv. 54, t. 29, f. 45.

One specimen only of this rare species has occurred to us; it was caught some years ago in the salmon nets at the mouth of the Tyne, and presented to us by Mr. John Hancock. "Occasionally seen at Hartlepool."—*Hogg's Nat. Hist. of Stockton.*

4. SEPIA, *Linnæus.*

1. S. OFFICINALIS, *Linn.* (Common Cuttle Fish).

Sepia officinalis, Penn. Brit. Zool. iv. 55.—Johns. in Berw. C. Proc. i. 200.

The dorsal plate or bone of the common cuttle fish is occasionally cast on shore on many parts of our coast, especially towards the north; but the animal itself is seldom met with. We have found it in the stomach of the cod at Cullercoats.

CLASS. GASTEROPODA, *Cuvier.*

ORDER. NUDIBRANCHIATA, *Cuvier.*

FAMILY. DORIDIDÆ, *Leach.*

5. DORIS, *Linnæus.*

1. D. TUBERCULATA, *Cuv.*

Doris Argo, Penn. Brit. Zool. iv. 43, t. 22, f. 22.

Doris tuberculata, Johns. in Ann. Nat. Hist. i. 50, t. 2, f. 1, 2, 3.

Frequent between tide-marks on the rocky parts of the coast.

2. D. JOHNSTONI, *Ald. and Hanc.*

Doris obvelata, Johns. in Ann. Nat. Hist. i. 52, t. 2. f. 4, 5, 6, 7.

Doris Johnstoni, Ald. and Hanc. Mon. Nudib. Moll., fam. 1, pl. 5.

Under stones between tide-marks, rather rare. Cullercoats and Newbiggin.

3. D. REPANDA, *Ald. and Hanc.*

Doris repanda, Ald. and Hanc. in Ann. Nat. Hist. ix. 32. Mon. Nudib. Moll., fam. 1, pl. 6.

Not unfrequent, but local. Among rocks, at and a little above low-water mark, north of Cullercoats haven. Rocks near the church, Newbiggin.

4. D. MERA, *Ald. and Hanc.*

Doris mera, Ald. and Hanc. in Ann. Nat. Hist. xiv. 330.

A single specimen was found under a stone near low-water mark in 1844.—*A. H.*

5. D. ASPERA, *Ald. and Hanc.*

Doris aspera, Ald. and Hanc. in Ann. Nat. Hist. ix. 32.

Common among rocks between tide-marks.

6. D. BILAMELLATA, *Linn.*

Doris bilamellata, Johns. in Ann. Nat. Hist. i. 53, t. 2, f. 8.

Common under stones between tide-marks, especially in the spring. Two varieties occur, one much larger than the other.

7. D. DEPRESSA, *Ald. and Hanc.*

Doris depressa, Ald. and Hanc. in Ann. Nat. Hist. ix. 32.

Under stones at low-water mark, Whitley; very rare.—*A. H.*

8. D. SPARSA, *Ald. and Hanc.*

Doris sparsa, Ald. and Hanc. in Ann. Nat. Hist. xviii. 293. Mon. Nudib. Moll., fam. 1, pl. 14.

A single example has occurred, found on *Cellepora pumicosa* from a fishing boat, Cullercoats.—*A. H.*

9. D. STELLATA, *Gmel.*

Doris pilosa, Johns. in Ann. Nat. Hist. i. 54, t. 2, f. 9, 10.

Among the rocks between tide-marks and a little beyond; not uncommon. This species is subject to great variation in colour and size. Four varieties occur on this coast, viz :—

Var. 1. Pure white.

2. Canary yellow; rare. A few specimens occurred at Newbiggin in 1843.—*J. A.*

3. Nearly black, or dull white spotted with black, through all the varieties of grey. (*Doris nigricans*, Flem. Brit. Anim. 283).

4. Large, and generally of a pale yellowish brown. This variety is rare with us, but common on some parts of the British coast, in rather deeper water than the other kinds.

10. DORIS SIMILIS, *Ald. and Hanc.*

Doris similis, Ald. and Hanc. in Ann. Nat. Hist. ix. 32.

From the fishing boats, Cullercoats; rather rare.

6. GONIODORIS, *Forbes.*

1. G. NODOSA, *Mont.*

Doris Barvicensis, Johns. in Ann. Nat. Hist. i. 55, t. 2, f. 11-13.

Goniodoris nodosa, Ald. and Han. Mon. Nudib. Moll., fam. 1. pl. 18.

Among the rocks at Tynemouth, Cullercoats, and Whitley; common. This is probably the *Doris marginata* of Hogg's Nat. Hist. of Stockton.

7. TRIOPA, *Johnston.*

1. T. CLAVIGER, *Müll.*

Triopa claviger, Johns. in Ann. Nat. Hist. i. 124.—Ald. and Hanc. Mon. Nudib. Moll., fam. 1. pl. 20.

Rare. We have twice met with this species from the fishing boats at Cullercoats, but never within tide-marks. The variety found on this coast is much smaller than those of the south of England.

8. POLYCERA, *Cuvier.*

1. P. QUADRILINEATA, *Müll.*

Doris flava, Mont. in Linn. Trans. vii. 79, t. 7, f. 6.

Polycera quadrilineata, Ald. in Ann. Nat. Hist. vi. 338, t. 9, f., 1-6.

On small sea weeds in pools near low-water mark, Tynemouth and Cullercoats; rather rare. Marsden, common.

2. P. OCELLATA, *Ald. and Hanc.*

Polycera ocellata, Ald. and Hanc. in Ann. Nat. Hist. ix. 33. Mon. Nudib. Moll., fam. 1, pl. 23.

Among the rocks near low-water mark ; not rare. Cullercoats and Whitley.

3. P. LESSONII, *D'Orb.*

Polycera Lessonii, D'Orb. in Mag. de Zool. vii. 5, t. 105.

Polycera citrina, Alder in Ann. Nat. Hist. vi. 340, t. 9, f. 7-9.

On *Gemellaria loriculata,* in from 15 to 20 fathoms water ; common. Cullercoats.—*J. A. and A. H.* Whitburn.—*Mr. R. Howse.*

9. ANCULA, *Lovén.*

1. A. CRISTATA, *Alder.*

Polycera cristata, Ald. in Ann. Nat. Hist. vi. 340, t. 9, f. 10, 11.

Ancula cristata, Ald. and Hanc. Mon. Nudib. Moll., fam. 1, pl. 25.

Among the rocks at Cullercoats and Whitley ; common. Newbiggin.—*J. A.* Marsden.—*A. H.* Holy Island —*Dr. Johnston.*

10. IDALIA, *Leuckart.*

1. I. ASPERSA, *Ald. and Hanc.*

Idalia aspersa, Ald. and Hanc. Mon. Nudib. Moll., fam. 1, pl. 26.

One specimen found on *Fusus antiquus* from the fishing boats, Cullercoats.—*J. A.*

2. I. ELEGANS, *Leuck. ?*

Body convex, white, tinged with flesh colour ; tentacles long and slender, with 4 long tentacular filaments in front, 2 at the base of each tentacle ; lateral filaments 6 on each side, very long, the last bifid : there are also 3 rows of filaments on the back ; the central one containing 3, the sub-lateral ones 5 each. Branchiæ, consisting of 11 slender pinnate plumes, largest in front, and becoming very small behind ; the anterior plume is bifid. Length, half an inch.

An individual of this species was obtained by the Rev. G. C. Abbes from the fishing boats at Whitburn. It is similar to a specimen from Torbay, preserved in the British Museum, and labelled *Idalia elegans,* by Dr. Leach. There may be some

doubt, perhaps, whether it is the *I. elegans* of Leuckart. It differs from *I. aspersa* in having five rows of filamentary appendages, as well as in their greater length, and in the slender form and unequal length of the branchiæ, which in *I. aspersa* are stout and equal, forming a regular rosette. The prevailing colour in this genus is red; our individual was white.

Family. Tritoniadæ, *Johnston.*

11. TRITONIA, *Cuvier.*

1. T. Hombergii, *Cuv.*

Tritonia Hombergii, Flem. Brit. Anim. 284; Johnston in Ann. Nat. Hist. i. 114, t. 3, f. 1, 2.

From deep water, rather rare. Whitburn.—*Rev. G. C. Abbes.* From a fishing boat at Newcastle Quay.—*Mr. W. King.* The jaws are somtimes met with in the stomachs of fish caught on the coast. Dr. Johnston states that it is not uncommon in Berwick Bay.

We have frequently got a small white Tritonia from the fishing boats at Cullercoats and Newbiggin, very like the young of this species, but differing in colour, and never approaching it in size. It may possibly be distinct, but we refrain from describing it until we are better acquainted with the young of *T. Hombergii.* We have named it in manuscript *T. alba.* Mr. Abbes has sent us the same variety from Whitburn.

2. T. plebeia, *Johns.*

Tritonia plebeia, Johns. in Ann. Nat. Hist. i. 115, t. 3, f. 3, 4; Ald. and Hanc. Mon. Nudib. Moll., fam. 2, pl. 3.

On old shells and zoophytes, especially on *Alcyonium digitatum*, from rather deepish water, common. Cullercoats, Newbiggin, and Whitburn.

Fam. Eolidiæ, *D'Orbigny.*

12. DENDRONOTUS, *Alder and Hancock.*

1. D. arborescens, *Müll.*

Dendronotus arborescens, Ald. and Hanc. Mon. Nudib. Moll., fam. 3, pl. 3.

Vars. *Tritonia pulchella,* Ald. and Hanc. in Ann. Nat. Hist. ix. 33.

Tritonia felina, Ald. and Hanc. in Ann. Nat. Hist. ix. 33.

Among the rocks near low-water mark at Cullercoats and Whitley, not uncommon. A specimen from Bamborough is labelled *Tritonia Trevelyana* by Dr. Leach in the British Museum.

13. DOTO, *Oken.*

1. D. FRAGILIS, *Forbes.*

Melibea pinnatifida, Johns. in Ann. Nat. Hist. i. 116.

Meliboea fragilis, Forbes Mal. Monen. 4, t. 1, f. 4.

On *Tubularia indivisa,* in about fifteen or twenty fathoms water, not rare. Cullercoats and Newbiggin.

2. D. CORONATA, *Gmel.*

Melibea coronata, Johns. in Ann. Nat. His. i. 117, t. 3, f. 5-8.

Doto coronata, Ald. and Hanc. Mon. Nudib. Moll., fam. 3, pl. 6.

Var. *Meliboea ornata,* Ald. and Hanc. in Ann. Nat. Hist. ix. 34.

On corallines near low-water mark, rather rare; common on *Plumularia falcata,* from the coralline zone on most parts of the coast.

14. EOLIS, *Cuvier.*

1. E. PAPILLOSA, *Linn.*

Eolidia papillosa, Johns. in Loud. Mag. Nat. Hist. viii. 376, f. 35. Ann. Nat. Hist. i. 118.

Under stones among the rocks between tide marks, not uncommon.

2. E. ROSEA, *Ald. and Hanc.*

Eolis rosea, Ald. and Hanc. in Ann. Nat. Hist. ix. 34.

Among the rocks at Cullercoats, rare.—*A. H.* This is rather a doubtful species, and may possibly be a variety of the last.

3. E. OBTUSALIS, *Ald. and Hanc.*

Eolis obtusalis, Ald. and Hanc. in Ann. Nat. Hist. ix. 34.

From the fishing boats, Cullercoats; rare.—*J. A.*

This is also nearly allied to *E. papillosa*, and requires further observation for its complete establishment.

4. E. PEACHII, *Ald. and Hanc.*

Eolis Peachii, Ald. and Hanc. in Ann. Nat. Hist. 2nd series, i. 191.

One specimen obtained from the fishing boats, Cullercoats.—*J. A.*

5. E. CORONATA, *Forbes.*

Eolis coronata, Ald. and Hanc. Mon. Nudib. Moll., fam. 3, pl. 12.

This very beautiful species is one of the commonest on our coast, near low-water mark.

6. E. CURTA, *Ald. and Hanc.*

Eolis curta, Ald. and Hanc. in Ann. Nat. Hist. xii. 234.

One specimen found among the rocks, at Whitley.—*A. H.*

Very nearly allied to *E. Drummondi*, of which it may be a variety.

7. E. RUFIBRANCHIALIS, *Johns.*

Eolidia rufibranchialis, Johns. in Ann. Nat. Hist. i. 121.

Among the rocks between tide marks, rather rare. Cullercoats and Whitley.

8. E. PELLUCIDA, *Ald. and Hanc.*

Eolis pellucida, Ald. and Hanc. in Ann. Nat. Hist. xii. 234. Mon. Nudib. Moll., fam. 3, pl. 19.

On a coralline brought in by the fishing boats at Cullercoats, very rare.—*A. H.*

9. E. GRACILIS, *Ald. and Hanc.*

Eolis gracilis, Ald. and Hanc. in Ann. Nat. Hist. xiii. 166.

Among the rocks north of Cullercoats, rare.—*A. H.* Newbiggin.—*J. A.* A variety occurs, smaller, less slender, and with the branchiæ of an orange colour: it may be distinct. We have also met with an Eolis, apparently belonging to this species, but with the branchiæ of a beautiful green colour. So great a variation in colour is not usual in the genus. These varieties require a re-examination, but the rarity of the species has hitherto prevented it.

10. E. ANGULATA, *Ald. and Hanc.*

Eolis angulata, Ald. and Hanc. in Ann. Nat. Hist. xiii. 165. Mon. Nudib. Moll., fam. 3, pl. 23.

On a stone brought in by the fishermen, Cullercoats.—*A. H.*

11. E. NANA, *Ald. and Hanc.*

Eolis nana, Ald. and Hanc. in Ann. Nat. Hist. ix. 36. Mon. Nudib. Moll., fam. 3, pl. 25.

Among the rocks at Cullercoats and Whitley, occasionally.

12. E. CONCINNA, *Ald. and Hanc.*

Eolis concinna, Ald. and Hanc. in Ann. Nat. Hist. xii. 234. Mon. Nudib. Moll., fam. 3, pl. 24.

Under a stone at low-water mark, Whitley.—*A. H.* Four individuals were found under the same stone in 1843, since which time the species has not been again met with.

13. E. OLIVACEA, *Ald. and Hanc.*

Eolis olivacea, Ald. and Hanc. in Ann. Nat. Hist. ix. 35. Mon. Nudib. Moll., fam. 3, pl. 26.

Among the rocks between tide marks, frequent. Cullercoats, Whitley, and Whitburn.

14. E. AURANTIACA, *Ald. and Hanc.*

Eolis aurantia, Ald. and Hanc. in Ann. Nat. Hist. ix. 34.

Near low-water mark, Cullercoats and Whitley, rather rare.

15. E. CINGULATA, *Ald. and Hanc.*

Eolis Hystrix, Ald. and Hanc. in Ann. Nat. Hist. ix. 35.

Eolis cingulata, Ald. and Hanc. Mon. Nudib. Moll., fam. 3, pl. 28.

A few specimens were found at low-water mark among the rocks north of Cullercoats, in 1841.—*J. A.*

16. E. VITTATA, *Ald. and Hanc.*

Eolis vittata, Ald. and Hanc. in Ann. Nat. Hist. ix. 35.

Two individuals, both rather injured, have been obtained at different times on corallines brought in on the fishing lines at Cullercoats.

17. E. NORTHUMBRICA, *Ald. and Hanc.*

Eolis Northumbrica, Ald. and Hanc. in Ann. Nat. Hist. xiii. 165; Mon. Nudib. Moll., fam. 3, pl. 31, f. 2, 3.

On a coralline from deep water, Cullercoats.—*A. H.*

18. E. PICTA, *Ald. and Hanc.*

Eolis pallida, Ald. and Hanc. in Ann. Nat. Hist. ix. 35.

Eolis picta, Ald. and Hanc. Mon. Nudib. Moll., fam. 3, pl. 33.

Among the rocks at Cullercoats, Whitley, and Tynemouth, frequent. Newbiggin.—*J. A.*

19. E. TRICOLOR, *Forbes.*

Eubranchus tricolor, Forbes Mal. Monen. 5.

Eolis violacea, Ald. and Hanc. in Ann. Nat. Hist. xiii. 166.

Eolis tricolor, Ald. and Hanc. Mon. Nudib. Mol., fam. 3, pl. 34.

One specimen found on a coralline from the fishing boats, Cullercoats.—*J. A.*

20. E. AMETHYSTINA, *Ald. and Hanc.*

Eolis amethystina, Ald. and Hanc. in Ann. Nat. Hist. xvi. 316.

One specimen found among the rocks at the north end of Cullercoats sands.—*A. H.*

21. E. DESPECTA, *Johns.*

Eolidia despecta, Johns. in Ann. Nat. Hist. i. 123.

Eolis despecta, Ald. and Hanc. Mon. Nudib. Moll., fam. 3, pl. 36.

Eighteen or twenty individuals were found together under a stone among the rocks at Whitley, feeding upon *Laomedea gelatinosa.*—*A. H.*

We have not met with the *Eolidia Cuvieri* of Dr. Johnston, found by him in Berwick Bay, though it is most likely an inhabitant of the Northumberland coast.

A small *Eolis* from Whitley rocks was described in the Annals of Natural History, under the name of *Eolis minuta.* The description was taken from an imperfect specimen, and as it has never occurred again, and there is a degree of uncertainty attending it, we have left it out of the present Catalogue.

ORDER. PELLIBRANCHIATA, *Alder and Hancock.*

15. LIMAPONTIA, *Johnston.*

1. L. NIGRA, *Johns.*

Limapontia nigra, Johns. in Loud. Mag. Nat. Hist. ix. 79.

On a conferva, in pools near high-water mark, Cullercoats; plentiful in the summer months.—*A. H.*

Order. INFEROBRANCHIATA, *Cuvier.*

16. PLEUROBRANCHUS, *Cuvier.*

1. P. PLUMULA, *Mont.*

Bulla plumula, Mont. Test. Brit. 214, t. 15, f. 9, and vign. 2, f. 5.

Pleurobranchus plumula, Johns. in Berw. C. Proc. ii. 27.

Between tide-marks, Holy Island.—*Dr. Johnston.*

Order. TECTIBRANCHIATA, *Cuvier.*

Fam. Aplysiadæ, *D'Orbigny.*

17. APLYSIA, *Linnæus.*

1. A. PUNCTATA, *Cuv.*

Laplysia depilans, Penn. Brit. Zool. iv. 42, t. 21, f. 21.

Aplysia mustelina, Johns. in Berw. C. Proc. ii. 29.

On sea-weeds beyond low-water mark, not uncommon; rare between tide-marks. Cullercoats, Whitley, and Newbiggin.

A specimen got at Newbiggin had the horny dorsal plate lined with a thin coating of shelly matter, not unlike what is seen in *Pleurobranchus membranaceus*; but as we did not observe any difference in the animal, we attribute it to the effect of age.

This Aplysia is very variable in its markings. It is often blotched and spotted with white.

Family. Bullidæ, *D'Orbigny.*

18. BULLÆA, *Lamarck.*

1. B. CATENA, *Mont.*

Bulla catena, Mont. Test. Brit. 215, t. 7, f. 7.

Bullæa catenata? Thorpe Brit. Mar. Conch. 138.

In shell sand, frequent. Tynemouth, Whitley, Newbiggin, and Cheswick. It has not been found alive on this coast, but appears to inhabit the Laminarian zone.

The description of *Bullæa catenata*, in Thorpe's "British Marine Conchology," agrees with this species, being a slight alteration of Montagu's, but the figure is that of *B. pectinata*, which is the *Scaphander catenata* of Leach. The latter species is described in the Addenda to the same work, under the name of *Bullæa catenulifera*, Macg.

2. B. PUNCTATA, *Adams.*

Bullæa punctata, Clark in Zool. Journ. iii. 339.

In shell sand, with the last, but not so common. Rarely found alive in pools among the rocks within tide marks.

This species has frequently been confounded with the last, but is perfectly distinct. The characters are accurately pointed out by Mr. Clark in the Zoological Journal.

3. B. PECTINATA, *Dillw.*

Bulla scabra, Mull. Zool. Dan. ii. 41, t. 71, f. 11, 12.

Bulla pectinata, Dillw. Cat. 481.

Scaphander catenata, Leach. Moll. (ined.).

Bullæa angustata, Phil. Moll. Sic. i. 121, t. 7, f. 17, b. c.

Bullæa catenulifera, Macg. Moll. Aberd. 187.

Bulla dilatata, S. Wood in Charlesw. Mag. Nat. Hist. iii. t. 7, f. 3.

Philine scabra, Lovén Ind. Moll. Scand. 9.

Bulla granulosa, Sars. (sec. Lovén).

Not uncommon in the Coralline Zone, and frequently found in the stomachs of haddocks, but the shell is seldom cast on shore. It occurs, however, in shell-sand, in the north of Northumberland.

We have more than once seen the animal in a fresh state but not alive. It is white, and above twice the size of the shell. The frontal disc is long, and without apparent eyes or tentacles, the sides of the foot broadly reflected, and the cloak, which probably covers the shell in a living state, is withdrawn when dead. The animal bears a great resemblance to that of *Bulla lignaria,* and the similarity in the form of the shell is also striking. We think it may probably have to be placed with that species in the genus *Scaphander* of Montfort, but the animals of this tribe require to be more carefully studied, and in the mean time, we prefer retaining the name *Bullæa,* of Lamarck, for these species, rather than making any further changes till the limits of the genera are better understood. The gizzard of *Bullæa pectinata* has more resemblance to the same organ in *B. aperta,* than to that of *B. lignaria,* having three triangular testaceous plates, similar to those of the former, but more slender and pointed.

As this species has had the misfortune to be much misunderstood, we have thought it desirable to give the synonyms of different authors. Philippi published it in the first volume of his "Enumeratio Molluscorum Siciliæ," under the name of *B. angustata*, but changed it in the second volume to *B. punctata*, Adams, and quotes *B. catena*, Mont., as a synonym.

4. B. QUADRATA, *S. Wood.*

Bulla quadrata, Wood in Charlsw. Mag. Nat. Hist. iii. 460, t. 7, f. 1.

Philine scutulum, Lovén Index Moll. Scand. 9.

Shell white, sub-diaphanous, globoso-quadrangular, rounded on the back and a little constricted above; covered with catenated spiral striæ, and having, in fresh specimens, one or two faint opake bands. Apex subtruncated, sunk in the centre, but not umbilicated, exposing scarcely one volution. Aperture large and wide, occupying nearly the whole of the shell: outer lip expanded above, and nearly straight at the side, the edge thin and slightly crenulated by the striae; a little angulated below; base wide and nearly straight; inner lip thin, bent a little above from the bulging of the body whorl into the aperture, not reflected but having a pretty strong margin of enamel laid over the whorl. Length $\frac{1}{4}$ in., breadth 2-tenths.

Of this interesting species a few fine specimens have been obtained at Whitburn, by the Rev. G. C. Abbes and Mr. R. Howse. It adds another to the species found fossil in the Crag, which have lately been ascertained to be still living in our seas.

Bulla quadrata differs from *B. catena* in the more globose and subquadrate form; also in having the apex broader and more depressed. In outline it more nearly resembles *B. aperta*. We have inserted a description of the recent shell, as its characters have not been all distinctly made out from the fossil.

5. B. PRUINOSA, *Clark.*

Bulla pruinosa, Clark in Zool. Journ. iii. 339.

A specimen of this rare species was dredged by Mr. R. Howse, off Whitburn, and another has also occurred to him in the stomach of a fish.

Bullæa aperta is included in Sir C. Sharp's list of Hartlepool

shells, and Captain Brown states that it is not uncommon on the Northumberland coast. We have not, however, been so fortunate as to meet with it, nor to hear of any one in this neighbourhood who has. We have, therefore, excluded it from the present list, more especially as we have no record of its having been met with by recent collectors on the north-eastern coast of Great Britain. It stands as a Frith of Forth shell on the authority of Captain Laskey.

19. BULLA, *Linnæus.*

1. B. Cranchii, *Leach.*

Bulla Cranchii, Flem. Brit. Anim. 292.—Johns. in Berw. C. Proc. ii. 30.

Bulla punctura, Johns. in Edinb. New Ph. Journ. v. 79.

From the haddock grounds, rare. All the specimens we have seen have been obtained from the stomachs of haddocks. It was first noticed on our coast by the Rev. W. Mark. Several years ago we got about twenty individuals in one season, since which time we have not met with it again until a few months ago, when four specimens were obtained from one fish. We have examined several of the animals in a decomposed state, but could not find any trace of a gizzard. The shell has long been known to collectors as the *Bulla (Roxania) Cranchii* of Leach, first announced as British by Dr. Turton, and we presume it is the same described by Dr. Fleming under that name, though we can scarcely recognise our shell in his description. It is not, however, the *B. cornea* of Lamarck, which that author states he had from Dr. Leach under the name of *Bulla Cranchii.* That species is the *B. hydatis* of British authors.

2. B. umbilicata, *Mont.*

Bulla umbilicata, Mont. Test. Brit. 222, t. 7, f. 4.

Very rare. Two specimens have been obtained from the stomachs of fish.—*J. A.*

3. B. cylindracea, *Penn.*

Bulla cylindracea Mont. Test. Brit. 221, t. 7, f. 2.

From the coralline zone, frequent.

We have only once met with the animal alive. It is of a pale

straw colour, rather small in proportion to the shell, and retractile within it. The frontal disc is large, slightly bilobed behind, but not produced into tentacles, and without apparent eyes. The foot is small and a little extended, and folded up at the sides. The epidermis when fresh is of a rusty orange colour.

4. B. TRUNCATA, *Adams.*

Bulla truncata, Mont. Test. Brit. 223, t. 7, f. 5.

Frequent in shell-sand, and occasionally found alive in pools among the rocks.

The animal has been described by Dr. Johnston. It differs from the last in having the disc, which is short and square, produced posteriorly into longish pointed tentacles, with eyes at the anterior base. It is the type of the genus *Cylichna* of Lovén, in which he also includes the two preceding and the following species. This genus we should gladly have adopted, but that we have doubts whether the species he has referred it to really belong to the same generic group, which an examination of the animals alone can decide.

5. B. OBTUSA, *Mont.*

Bulla obtusa, Mont. Test. Brit. 223, t. 7, f. 3.

Rather rare. In sand at Cheswick, and Newbiggin.—*J. A.*

20. AMPHISPHYRA, *Lovén.*

1. A. HYALINA, *Turt.*

Bulla hyalina, Turt. in Loud. Mag. Nat. Hist. vii. 373.

Utriculus pellucidus, Brown, Illust. Rec. Conch. 59, t. 19, f. 10, 11.

In shell sand, not rare. We have once or twice found it alive in pools between tide-marks at Cullercoats.

The specimens from which Dr. Turton described his *Bulla hyalina*, we found in sand collected at Tynemouth. The *Utriculus pellucidus*, *U. candidus*, and *U. minutus* of Capt. Brown appear to us to be this shell in different stages of growth.

The animal of this species differs so materially from the other *Bullidæ* that we hesitate not to adopt the genus proposed for it by Professor Lovén. The absence of the frontal disc and the position of the tentacles (which are short and obtuse) in front

of the head and before the eyes, sufficiently distinguish it from the other genera of the family. The animal is white and retractile within the shell, from which it is seldom much protruded, keeping its eyes under the protection of the transparent shell, through which it looks as through a window. This practice we have noticed in several of the Mollusca, whose shells are transparent. It has no gizzard nor operculum.

Family. Actæonidæ, *D'Orbigny.*

21. ACTÆON, *Montfort.*

1. A. TORNATILIS, *Linn.*

Voluta tornatilis, Mont. Test. Brit. 231.

From deepish water, rather rare. Occasionally found in the stomachs of fish.

The animal of this genus comes very near to that of Bulla, having a broad lobed disc in front, without tentacles. We find, too, that the branchial aperture is lateral, the cloak being closed across the front, and open only on the right side, which further confirms us in assigning it a place in this order. The operculum can scarcely be considered of more than generic importance.

Order. PULMONATA, *Cuvier.*

Family. Limacidæ, *Fleming.*

22. ARION, *Férussac.*

1. A. ATER, *Linn.* (Common black Slug).

Arion ater, Gray Turt. Man. 104.

In woods, fields, and hedges, very common.

Férussac considers the black head and tentacles, and the transverse black lines round the margin of the foot, to be the only permanent distinctive characters in this very variable species. The varieties we have observed in this neighbourhood are the following :—

1. Entirely black.
2. Black, with the sides of the foot yellow or orange.

3. Blackish above, with a black band on each side of the body, and the sides yellowish white.

4. Yellowish or greenish white, with black tentacles.

The young are always much paler than the adults, and are sometimes of a transparent white. We have not met with the rufous variety in this district.

2. A. FLAVUS, *Müll.*

Arion flavus, Fér. Hist. des Moll. Supp. 96; Bouchard Chantereaux Cat. des Moll. du Pas-de-Calais, 23.

Limax flavus, var. γ, Nilsson Moll. Suec. 5. "*Pallidus, clypeo flavo, dorso sub-cinerascente.*"

The variety has once occured to us; found on the moors near Haltwhistle by Mr. J. Blacklock.

M. Bouchard Chantereaux considers this species distinct from *A. ater*, and it has not the characters of the latter pointed out by Ferussac; but we know too little of it to give a decided opinion in so difficult a genus. Our individual was about an inch in length, with the body whitish, having a faint greyish tinge above. The shield and the posterior part of the body near the tail were of a pale canary yellow. Tentacles, grayish white. The mucus was deep orange-yellow. The mucus of *A. ater* is colourless or very faintly tinged with yellow.

3. A. HORTENSIS, *Fér.*

Arion hortensis, var. 2, Gray Turt. Man. 107.

Limax fasciatus, Nilsson Moll. Suec. 3.

Limax circumscriptus, Johns. in Edinb. Phil. Journ. v. 77.

In gardens, common.

A variety, or, as we are inclined to think, a species nearly allied to this, is found in woods. It is about twice the size of the garden slug, and its colour invariably yellowish fawn, inclined to amber, with a brown band on each side. We have never found the two kinds mixed, the one inhabiting woods, and the other cultivated grounds. This variety, we find, is well known to the Rev. B. J. Clarke, who also finds it constant in colour and markings. The mucus is orange yellow.

23. LIMAX, *Linnæus.*

1. L. MAXIMUS, *Linn.*

Limax cinereus, Müll. Verm. 5 ; Drap. Hist. Moll. 124, t. 9, f. 11.

Limax maximus, Gray Turt. Man. 112 ; Clarke in Ann. Nat. Hist. xii. 333, t. 10, f. 1.

In woods and fields, frequent.

2. L. ARBORUM. *Bouchard.*

Limax arborum, Bouch. Chan. Moll. du Pas-de-Calais, 28.

Limax arboreus, Clarke in Ann. Nat. Hist. xii. 334, t. 11, f. 4-10.

In woods at Wolsingham and Shotley Bridge.—*Mr. W. Backhouse.* Howick woods.—*Mr. R. Embleton.*

3. L. FLAVUS, *Linn.*

Limax variegatus, Drap. Hist. Moll. 127.

Limax flavus, Gray Turt. Man. 114 ; Clarke in Ann. Nat. Hist. xii. 338, t. 11, f. 11, 12.

In cellars, not common. Newcastle.—*J. A.* Sunderland.—*Mr. R. Howse.*

4. L. SOWERBII, *Fér.*

Limax carinatus, Gray Turt. Man. 115.

Limax Sowerbii, Clarke in Ann. Nat. Hist. xii. 338, t. 12, f. 14, 15.

Near Benwell.—*Mr. W. Backhouse.*

5. L. TENELLUS, *Müll.*

Limax tenellus, Müll. Verm. ii. 11. Nilsson Moll. Suec. 10 ; Drap. Hist. Moll. 127.

In a wood at Allansford, near Shotley Bridge.

A specimen of this interesting species was brought us from the above locality by Mr. Blacklock. It was of a pale, dull yellow, very transparent and lubricous, with an obscure band on each side of the shield and back ; the posterior part of the shield rounded ; the tentacles black ; length rather more than an inch; the mucus orange-coloured. In all these particulars it agrees with the description of *Limax tenellus*, given by Nilsson, in his

excellent little work, "Historia Molluscorum Sueciæ."* Wishing to have the opinion of the Rev. B. J. Clarke, whether this was the young of any of the species he has so admirably described, we sent him a drawing and description of it. Mr. Clarke states that but for the black tentacles he would have thought the drawing to represent the young of *Limax flavus*, but taking the description into consideration, he thinks us justified in considering it distinct. The blue tentacles are a permanent character in *L. flavus*, and M. Bouchard Chantereaux says that its mucus is colourless.

6. L. AGRESTIS, *Linn.*

Limax agrestis, Gray Turt. Man. 117; Clarke in Ann. Nat. Hist. xii. 338, t. 12, f. 13.

In fields and gardens; much too common.

7. L. BRUNNEUS, *Drap.*

Limax brunneus, Johns. in Berw. C. Proc. i. 154; Gray Turt. Man. 117.

In damp woods, frequent.

This species was introduced into our Fauna by Dr. Johnston, and considered to be the *L. brunneus* of Draparnaud, partly, perhaps, in conformity with our opinion. Draparnaud's species, however, is very obscure, and was unknown to Férussac. M. Bouchard Chantereaux finds a species in the north of France, which he considers to be the *L. brunneus*. His description of it agrees pretty well with our animal, but a comparison of the specimens would be necessary to pronounce on their complete identity. It is quite distinct from the dark variety of *L. agrestis*.

*As this is the first time the species has been noticed as British, we insert Nilsson's description :—"Animal parvum, vix 1¼ unc. longum. Clypeus lineis subtilibus concentricis striatus, apertura laterali postica. Collum supra linea longitudinali elevata, lateribus subreticulatis. Dorsum posticè compressum. Color clypei et dorsi postici luteus; dorso supra luteo-virescente levissimo cinerascente, subtus albo. Tentacula, caput, et linea colli utrinque nigra. Mucus luteus. *Habitat* in sylvis inter folia putrescentia, humida, rarius."—*Nils. Hist. Moll. Suec.* 10.

Fam. Helicidæ, *Jeffreys.*

24. VITRINA, *Draparnaud.*

1. V. pellucida, *Müll.*

Vitrina pellucida, Gray Turt. Man. 120, t. 3, f. 21.

Among decayed leaves and under stones in woods, on old walls, and on the sea banks; frequent. Abundant in short grass, on and near St. Mary's Island, Hartley; where, in some states of the weather, it is difficult to walk without crushing numbers of them.

25. SUCCINEA, *Draparnaud.*

1. S. putris, *Linn.*

Succinea amphibia, Drap. Hist. Moll. 58, t. 3, f. 22, 23.

Succinea putris, Gray Turt. Man. 178, t. 6, f. 73.

Var. *Succinea gracilis,* Ald. in Newc. N. H. Trans. ii. 338.

Succinea Pfeifferi, Gray Turt. Man. 179, t. 6, f. 74*.

On aquatic plants in marshy places, and at the borders of rivulets, common.

This species is subject to very great variety. Further observation inclines us to unite with it the *S. gracilis* of our former Catalogue, though opinions are still very much divided upon that point. The *S. Pfeifferi* of Rossmassler does not appear to be exactly equivalent to our *S. gracilis,* though doubtless a nearly allied variety. Rossmassler describes it to be thick, and with a pearly lustre inside, which is not the case with ours. There is a very stunted and dwarf variety with the animal nearly black, not uncommon on plants and stones close to the edge of rivulets, and frequently on stones surrounded by the stream; which, if *S. gracilis* be retained as a species, seems entitled to a similar rank.

26. HELIX, *Linnæus.*

1. H. aspersa, *Müll.*

Helix aspersa, Gray Turt. Man. 128, t. 4, f. 35.

In gardens and on hedge sides, common. Very abundant on the sea banks on a limestone soil.

2. H. ARBUSTORUM, *Linn.*

Helix arbustorum, Gray Turt. Man. 137, t. 3, f. 25.

In woods and on sea banks, frequent.

3. H. NEMORALIS, *Linn.*

Helix nemoralis, Gray Turt. Man. 132, t. 3, f. 23.

On hedge sides and sea banks, common.

4. H. HORTENSIS, *Müll.*

Helix hortensis, Gray Turt. Man. 130, t. 3, f. 24.

Var. *Helix hybrida*, Gray Turt. Man. 132.

In woods and on hedge sides, frequent. The *H. hybrida* is found at Stella.

5. H. CANTIANA, *Mont.*

Helix carthusiana, Drap. Hist. Moll. 102, t. 6. f. 33.

Helix cantiana, Gray Turt. Man. 144, t. 3, f. 26.

On road sides and hedge banks, occasionally.

6. H. RUFESCENS, *Penn.*

Helix glabella, Drap. Hist. Moll. 102, t. 7, f. 6.

Helix rufescens, Gray Turt. Man. 156, t. 3, f. 28.

Under stones and on plants by hedge sides, &c. Not uncommon near Sunderland, and in other parts of the magnesian limestone district. It is not met with in the neighbourhood of Newcastle.

7. H. HISPIDA, *Müll.*

Helix hispida, Gray Turt. Man. 154, t. 4, f. 41.

On plants in woods and waste places, common.

Var. 1. *Helix concinna*, Jeff., Gray Turt. Man. 154, t. 12, f. 135.

Common on nettles and other plants by hedge sides, about Newcastle, where it takes the place of *H. rufescens*.

Var. 2. H. SERICEA *(Müll.?) Fér*, Ald. in Newc. N. H. Trans. ii. 340; Gray Turt. Man. 153, t. 12, f. 134.

In woods, rare: Cawsey Dean, Tanfield, and in the Bath Wood, Dinsdale.

The great difficulty in distinguishing these hispid shells by any permanent character, has induced us to consider them all varieties of the same species, of which *H. concinna* and *H. sericea* form the two extremes.

8. H. GRANULATA, *Alder.*

Helix hispida, Mont. Test. Brit. 423.

Helix granulata, Ald. in Newc. N. H. Trans. 1, 39; Gray, Turt. Man. 151, t. 3, f. 29.

In woods, rather local, but generally plentiful where it occurs. Stella and Walbottle Deans. Claxheugh, near Sunderland.—*Mr. R. Howse.*

This is much more permanent in its character than the last. It is generally paler, and always more globular, light, and hispid.

9. H. FUSCA, *Mont.*

Helix fusca, Gray, Turt. Man. 147, t. 4, f. 36.

On brambles, and other plants, in moist woods, frequent.

10. H. EXCAVATA *(Bean MS.), Alder.*

Helix excavata, Ald. in Newc. N. H. Trans. i., 38.

Zonites excavatus, Gray, Turt. Man. 175, t. 12, *f.* 138.

Under decayed wood and timber that has lain awhile on the ground, rare. Stella Dean, where it was first observed by the Rev. Wm. Mark; also in Gibside Woods (whence we have got a white variety,) and in one or two of the adjoining deans, but sparingly.

11. H. LUCIDA, *Drap.*

Zonites lucidus, Gray, Turt. Man. 174, t. 4, f. 38.

In marshy places, rare. Heaton Dean, and near Dinsdale.—*J. A.*

12. H. RADIATULA, *Alder.*

Helix radiatula, Ald. in Newc. N. H. Trans. i. 38.

Zonites radiatulus, Gray, Turt. Man. 173, t. 12, f. 137.

Var. *Helix vitrina,* Fér. Tab. des Moll., No. 217.

In wet moss, not uncommon. The variety in Gibside woods.

13. H. NITIDULA, *Drap.*

Zonites nitidulus, Gray, Turt. Man. 172, t. 12, f. 136.

Under stones by hedge sides and in woods, common.

14. H. ALLIARIA, *Miller.*

Zonites alliarius, Gray, Turt. Man. 168, t. 4, f. 39.

Under stones, decayed leaves, and moss, in woods and on hedge banks, common.

15. H. CELLARIA, *Müll.*

Zonites cellarius, Gray, Turt. Man. 170, t. 4, f. 40.

In cellars and yards, also in gardens, and under stones in fields and woods, common. This species is found in the centre of Newcastle, and is the only shell-snail we are acquainted with inhabiting such situations.

16. H. PURA, *Alder.*

Helix pura, Ald. in Newc. N. H. Trans. i. 37.

Zonites purus, Gray, Turt. Man. 171, t. 4, f. 43.

Var. *Helix nitidosa*, Fér. Tab. des Moll., No. 214.

Under stones, decayed leaves, &c., in woods, not uncommon.

17. H. CRYSTALLINA, *Müll.*

Zonites crystallinus, Gray, Turt. Man. 176, t. 4, f. 42.

In moss and under dead leaves in woods, &c., common.

18. H. FULVA, *Müll.*

Helix trochiformis, Mont. Test. Brit. 427, t. 11, f. 9.

Helix fulva, Gray, Turt. Man. 148, t. 5, f. 47.

Var. *Helix Mortoni*, Jeff. in Linn. Trans. xvi. 332.

In moss and under stones in woods, frequent. The variety is found in a marshy spot in Heaton Dean.

19. H. LAMELLATA, *Jeff.*

Helix Scarburgensis, Ald. in Newc. N. H. Trans. i. 36.

Helix lamellata, Gray, Turt. Man. 150, t. 5, f. 48.

Under dead leaves in moist woods. Gibside woods, Walbottle Dean, and Tanfield.

20. H. ACULEATA, *Müll.*

Helix aculeata, Gray, Turt. Man. 149, t. 4, f. 33.

In moss and under stones in most of our woods, sparingly.

21. H. PULCHELLA, *Müll.*

Helix pulchella, Gray, Turt. Man. 141, t. 5, f. 49.

In moss and under stones, local,—generally on limestone. West Boldon, not uncommon; Marsden, and Castle Eden.—*J. A.* Cleadon, Ryhope, and Claxheugh (at the latter place abundant.)—*Mr. R. Howse.* We have found it very sparingly on St. Mary's Island, and on the sea banks, near Tynemouth; the only localities yet observed in this district, where it occurs off the limestone.

22. H. PYGMÆA, *Drap.*

Zonites pygmæus, Gray, Turt. Man. 167, t. 5, f. 46.

Under decayed leaves in woods, not uncommon.

23. H. RUPESTRIS, *Drap.*

Helix umbilicata, Mont. Test. Brit. 434, t. 13, f. 2.

Zonites umbilicatus, Gray, Turt. Man. 166, t. 5, f. 45.

In old quarries, and walls in exposed situations, local, and apparently confined to limestone. Very abundant in old limestone quarries at Marsden.

Mr. Gray has claimed priority for Montagu's names for this and some other species over those of Draparnaud, but we are informed by the Abbé Dupuy that the names of Draparnaud bear date from the publication of his "Tableau des Mollusques," in which this, along with other species, was described in 1801, two years prior to the appearance of Montagu's "Testacea Britannica." The "Tableau des Mollusques" being unknown, excepting by name, to British naturalists, they have been accustomed to consider Draparnaud's species to date from the publication of his "Histoire Naturelle des Mollusques, &c.," in 1805.

24. H. ROTUNDATA, *Müll.*

Zonites rotundatus, Gray, Turt. Man. 165, t. 5, f. 44.

Under stones by way sides, in woods, &c., common. We have found the beautiful greenish white variety in Benwell Lane and at Tanfield, but very rare.

25. H. CAPERATA, *Mont.*

Helix striata, Drap. Hist. Moll. 106, t. 6, f. 18-21 (not Müller).

Helix caperata, Gray, Turt. Man. 162, t. 4, f. 32.

On dry banks and in old quarries, common near the sea, especially on limestone; rarer inland. We once met with a considerable number of them after a shower, on the banks of the Tyne, near Benwell, studding the trunk of a tree as high up as we could reach.

26. H. VIRGATA, *Da Costa.*

Helix variabilis, Drap. Hist. Moll. 84, t. 5, f. 11, 12.

Helix virgata, Gray, Turt, Man. 160, t. 4, f. 31.

On plants in old quarries on road sides and sea banks, al-

ways on a limestone soil ; local, but generally abundant where it does occur ; plentiful near Sunderland, and at Bamborough.

27. H. ERICETORUM, *Linn.*

Helix ericetorum, Gray, Turt. Man. 163, t. 4, f. 37.

On banks and dry pastures near the sea, not uncommon. Most plentiful on limestone.

27. BULIMUS, *Bruguière.*

1. B. OBSCURUS, *Müll.*

Bulimus obscurus, Gray, Turt. Man. 183, t. 6, f. 63.

Under stones in old quarries and in woods, frequent, but more plentiful on a limestone soil.

28. ZUA, *Gray.*

1. Z. LUBRICA, *Müll.*

Bulimus lubricus, Drap. Hist. Moll. 75, t. 4, f. 24.

Zua lubrica, Gray, Turt. Man. 188, t. 6, f. 65.

In moss and under stones, common.

29. ACHATINA, *Lamarck.*

1. A. ACICULA, *Müll.*

Achatina acicula, Gray, Turt. Man. 191, t. 6, f. 71.

Rare. One specimen found alive in the gardens at Whitley House.—*J. H. F.* At the roots of an *Ornithogalum* in a garden at Darlington.—*Mr. W. Backhouse.* In the rejectments of the river Tyne at Bywell.—*Mr. Benjamin Johnson, Jun.* The shell occurs sometimes on the sands at Tynemouth, probably washed from the banks.

30. AZECA, *Fleming.*

1. A. TRIDENS, *Mont.*

Helix (Heliomanes) Goodalli, Fér. Tab. des Moll. No. 492, ter.

Azeca tridens, Gray, Turt. Man. 189, t. 5, f. 52.

On mossy banks in woods, rather local but generally plentiful where it does occur. Scotswood, Meldon, Stella, Tanfield, Castle Eden, and Middleton-one-Row. Tunstal Hope, Pallion.—*Mr. R. Howse*

31. CLAUSILIA, *Draparnaud.*

1. C. LAMINATA, *Mont.*

Clausilia bidens, Gray, Turt. Man. 212, t. 5, f. 53.

In woods, frequent. Mr. Hanley informs us that this is not the *Turbo bidens* of Linnæus, for which the name must be reserved.

2. C. DUBIA, *Drap.*

Clausilia dubia, Ald. in Newc. N. H. Trans. ii. 339 ; Gray, Turt. Man. 216, t. 12, f. 143.

On rocks at West Boldon and Castle Eden. Tunstall Hill and Ryhope Dean.—*Mr. R. Howse.*

3. C. RUGOSA, *Drap.*

Clausilia rugosa, Drap. Hist. Moll. 73, t. 4, f. 19, 20.

Clausilia nigricans, Gray, Turt. Man. 217, t. 5, f. 58.

Var. More slender, and nearly smooth.

Clausilia parvula, Turt. Man. 1st Ed. 74, f. 58 (not *C. parvula* of continental authors).

On stones, trees, &c., in woods and rocky places, not uncommon. The variety in Tanfield and Castle Eden Deans.

32. BALÆA, *Gray.*

1. B. PERVERSA, *Linn.*

Pupa fragilis, Drap. Hist. Moll. 68, t. 4, f. 4.

Balæa perversa, Gray, Turt. Man. 207, t. 6, f. 70.

In moss and on old walls, not common. Castle Eden.—*J. A.* Ryhope Dean.—*Mr. R. Howse.*

33. PUPA, *Draparnaud.*

1. P. MARGINATA, *Drap.*

Pupa marginata, Gray, Turt. Man. 196, t. 7, f. 79.

On the sea banks, frequent.

2. P. UMBILICATA, *Drap.*

Pupa umbilicata, Gray, Turt. Man. 193, t. 7, f. 78.

Under stones in old quarries, woods, &c., common.

3. P. ANGLICA, *Fér.*

Pupa Anglica, Gray, Turt. Man. 195, t. 7, f. 82.

In moss and under stones, rather rare. Walbottle Dean, Castle Eden, and sea banks at Cullercoats.—*J. A.* Near Ridley Hall.—*Mr. J. Thompson.* Sea banks near Ryhope.—*Mr. R. Howse.* "Near Twizell House."—*Brown's Illust. Rec. Conch.*

34. VERTIGO, *Müller.*

1. V. CYLINDRICA, *Fér.*

Pupa muscorum, Drap. Hist. Moll. 59, t. 3, f. 26, 27.

Vertigo cylindrica, Gray, Turt. Man. 200, t. 12, f. 140.

This rare species has lately been added to our local list by Mr. R. Howse, who has found several specimens at the roots of grass on a bank at Claxheugh, Bishop Wearmouth.

The animal is pale transparent gray, with two black lines along the back; in other respects agreeing with the character of the genus.

2. V. EDENTULA, *Drap.*

Vertigo edentula, Gray, Turt. Man. 199, t. 7, f. 80.

Among grass and under dead leaves in woods, frequent. We once met with this species in great abundance, by sweeping the long grass in Castle Eden Dean, with a hand net, after a shower of rain; in dry weather they lie under dead leaves and moss.

3. V. PYGMÆA, *Drap.*

Vertigo pygmæa, Gray, Turt. Man. 201, t. 7, f. 83.

Under stones and on old walls, generally in dry situations; not rare.

4. V. ALPESTRIS *(Fér. MS.), Alder.*

Vertigo alpestris, Ald. in Newc. N. H. Trans. ii. 340; Gray, Turt. Man. 202, t. 12, f. 141.

On an old wall near Lipwood House.—*Mr. J. Thompson.*

5. V. PALUSTRIS *(Leach), Jeff.*

Vertigo palustris, Gray, Turt. Man. 204, t. 7, f. 85.

In marshy places, rare. In a bog near Darlington.—*Mr. W. Backhouse.* Sea banks near Ryhope.—*Mr. R. Howse.* "Near Twizell House."—*Capt. Brown, Illust.*

6. V. SUBSTRIATA, *Jeff.*

Pupa sexdentata, Ald. in Newc. N. H. Trans. i. 34.

Vertigo substriata, Gray, Turt. Man. 202, t. 7, f. 84.

In wet moss in woods, rather rare. Heaton Dean, Tanfield, Ravensworth, Gibside, and Stella.

7. V. PUSILLA, *Müll.*

Vertigo pusilla, Gray, Turt. Man. 205, t. 7. f. 86.

In damp moss in woods, rather rare. Tanfield.—*A. H.* Near Crowhall Mill.—*Mr. J. Thompson.*

FAMILY. CYCLOSTOMIDÆ, *Gray.*

35. ACME, *Hartmann.*

1. A. LINEATA, *Drap.*

Auricula lineata, Drap. 57, t. 3, f. 20, 21.

Acme fusca, Gray, Turt. Man. 223, t. 6, f. 66.

In wet moss, Castle Eden Dean, rare.

The Abbé Dupuy informs us that this species has an extremely thin, transparent, subspiral operculum. This interesting discovery accounts for the very great resemblance of the animal to *Cyclostoma*, which we had previously remarked. The operculum must be very thin and inconspicuous, as it has hitherto been entirely overlooked.

This is probably the species of Walker, which Montagu calls *Turbo fuscus*, but as Walker does not use any specific name, that of *fuscus* can only date from Montagu, and consequently does not take precedence of Draparnaud's.

FAMILY. AURICULIDÆ, *Gray.*

36. CARYCHIUM, *Müller.*

1. C. MINIMUM, *Müll.*

Carychium minimum, Gray, Turt. Man. 221, t. 7, f. 77.

Among moss and decayed leaves in woods, &c., common.

37. CONOVULUS, *Lamarck.*

1. C. DENTICULATUS, *Mont.*

Conovulus denticulatus, Gray, Turt. Man. 225, t. 12, f. 144.

Var. *Voluta ringens*, Turt. Conch. Dict. 250.

Carychium personatum, Mich. Comp. Drap. 73, t. 15, f. 42, 43.

In crevices of the cliff a little above high-water mark at the south end of South Shields sands (the variety), rare.—*A. H.* Whitburn.—*Rev. G. C. Abbes.*

2. C. BIDENTATUS, *Mont.*

Conovulus bidentatus, Gray, Turt. Man. 227, t. 12, f. 145.

In sand at Tynemouth, rare.—*J. A.* We have not met with this species alive, but it will most likely be found to inhabit the crevices of rocks near high-water mark.

FAMILY. LIMNÆIDÆ, *Jeffreys.*

38. LIMNÆA, *Lamarck.*

1. L. STAGNALIS, *Linn.*

Limnœus stagnalis, Gray, Turt. Man. 236, t. 9, f. 104.

In ponds at Prestwick Car. It occurs in a pond in Mr. Sewell's grounds, Heaton Dean, but may possibly have been introduced.—*A. H.*

2. L. PALUSTRIS, *Linn.*

Limnœus pulustris, Gray, Turt. Man. 239, t. 9, f. 107.

In ditches and marshes, not uncommon.

In Prestwick Car, and in other marshes and still waters, they grow to a large size, but at the margins of rivers they are very much stunted in growth, and have the aspect of a distinct species. On the shores of the Tyne, where they are abundant, they are not larger than the common-sized *L. truncatula*, and might be taken for that species, but for the less ventricose whorls, and that the latter species is also found in the same situations in an equally dwarfed condition.

3. L. TRUNCATULA, *Müll.*

Limneus minutus, Drap. Hist. Moll. 53, t. 3, f. 5, 6, 7.

Limnœus truncatulus, Gray, Turt. Man. 240, t. 9, f. 108.

In ditches, common.

The variety γ of Draparnaud, found at the margins of rivers, has a very delicate and beautiful shell. The curious monstrosity mentioned by Dr. Turton, with the spire completely sunk into the body whorl, was found by us some years ago in Elswick Lane, and presented to Dr. Turton, who omitted to mention the locality.

4. L. GLABRA, *Müll.*

Limnæus glaber, Gray, Turt. Man. 242, t. 9, f. 106.

Limneus elongatus, Drap. Hist. Moll. 53, t. 3, f. 3, 4.

In ditches and ponds, not uncommon near Newcastle.

5. L. PEREGRA, *Müll.*

Limnæus pereger, Gray, Turt. Man. 233, t. 9, f. 101.

Var. *Limneus ovatus*, Drap. Hist. Moll. 50, t. 2, f. 30, 31.

In ponds, ditches, and slow streams, very common.

The numerous varieties of this common species, in form, size, and consistency, are very perplexing to the conchologist. We have got it with a rather strong shell, and the spire much produced, at Redheugh and on Holy Island ; and a curious variety in the opposite extreme has been sent us from Darlington, by Mr. Wm. Backhouse, with a very thin delicate shell, and scarcely any spire. The latter comes very near to the form got by Mr. Thompson in Lough Neagh, which is the *Gulnaria lacustris* of Leach.

6. L. AURICULARIA, *Linn.*

Limnæus auricularius, Gray, Turt. Man. 232, t. 9, f. 100.

At Prestwick Car (a small variety).—*A. H.* In ponds near Darlington.—*Mr. W. Backhouse*, from whom we have received very fine specimens.

39. PHYSA, *Draparnaud.*

1. P. FONTINALIS, *Linn.*

Physa fontinalis, Gray, Turt. Man. 251, t. 9, f. 110.

In ponds and ditches, not common. Preswick Car, Gosforth Lake, Mill Stream near Busy Cottage, Ryton, Marsden, and near Stockton.

2. P. HYPNORUM, *Linn.*

Aplexus hypnorum, Gray, Turt. Man. 255, t, 9, f. 113.

In ditches and ponds, frequent.

40. PLANORBIS, *Müller.*

1. P. CORNEUS, *Linn.*

Planorbis corneus, Gray, Turt. Man. 258, t. 8, f. 95.

In a pond in Mr. W. Backhouse's grounds at Darlington.

2. P. ALBUS, *Müll.*

Planorbis albus, Gray, Turt. Man. 259, t. 8, f. 97.

In ponds and slow streams, frequent.

3. P. LÆVIS, *Alder.*

Planorbis lævis, Ald. in Newc. Nat. Hist. Tran. ii. 337. Gray, Turt. Man. 261, t. 12, f. 148.

In ponds at Whitley Quarries, and on Holy Island.

4. P. NAUTILEUS, *Linn.*

Planorbis imbricatus, Gray, Turt. Man. 261, t. 8, f. 94.

In ponds, frequent.

5. P. CARINATUS, *Müll.*

Planorbis carinatus, Gray, Turt. Man. 262, t. 8, f. 89.

Rare. Near Stockton.—*Mr. W. Backhouse.*

6. P. UMBILICATUS, *Müll.*

Planorbis complanatus, Ald. in Newc. N. Hist. Trans. i. 31.

Planorbis marginatus, Gray, Turt. Man. 265, t. 8, f. 87, 88.

In ponds and ditches, not common. Prestwick Car, Ryton Haughs, and near Stockton.

7. P. SPIRORBIS, *Linn.*

Planorbis spirorbis, Gray, Turt. Man. 268, t. 8, f. 98.

In ditches, common.

8. P. NITIDUS, *Müll.*

Planorbis nitidus, Gray, Turt. Man. 268, t. 8, f. 93.

Rather rare. In ponds at Redheugh. Benwell engine pond. —*W. Sutton.* Near Middleton-one-Row and Stockton.—*J. A.*

9. P. CONTORTUS, *Linn.*

Planorbis contortus, Gray, Turt. Man. 270, t. 8, f. 96.

In ditches and ponds, not common. Prestwick Car, Gosforth Lake, Ryton Haughs, near Wooler, and near Stockton.

41. ANCYLUS, *Geoffroy.*

1. A. FLUVIATILIS, *Müll.*

Ancylus fluviatilis, Gray, Turt. Man. 249, t. 10, f. 125.

On stones in rivulets, common.

2. A. LACUSTRIS, *Müll.*

Velletia lacustris, Gray, Turt. Man. 250, t. 10, f. 126.

On aquatic plants in ponds and ditches, not common. Prest-

wick Car, Crag Lake, in ponds near Benwell, and at Middleton-one-Row.

Order. PECTINIBRANCHIATA, *Cuvier.*

Family. Paludinidæ, *Risso.*

42. BITHINIA, *Gray.*

1. B. TENTACULATA, *Linn.*

Paludina impura, Ald. in Newc. Nat. Hist. Trans. i. 29.

Bithinia tentaculata, Gray, Turt. Man. 93, t. 10, f. 120.

In ditches and ponds, not common. Prestwick Car, and mill stream in Jesmond Dean. "Abundant near Stockton."—*Mr. Hogg.*

Dead specimens of *Paludina achatina* are occasionally thrown up on our shores, but as the shell is frequently brought in ballast from the south of England, we attribute them to that source.

43. VALVATA, *Müller.*

1. V. PISCINALIS, *Müll.*

Valvata piscinalis, Gray, Turt. Man. 97, t. 10, f. 114.

In ponds and slow streams, rather rare. Mill streams in Jesmond Dean. "Common in streams about Stockton."—*Mr. Hogg.*

2. V. CRISTATA, *Müll.*

Valvata cristata, Gray, Turt. Man. 98, t. 10, f. 115.

In ponds at Prestwick Car, rare.

Family ——.

44. STYLIFER, *Broderip.*

1. S. TURTONI, *Brod.*

Phasianella stylifera, Turt. in Zool. Journ. ii. 367, t. 13, f. 11.

Stylifer globosus, Johns. in Berw. Club Proc. i. 275.

On the spines of *Echinus sphæra,* rare. Newbiggin and Cullercoats.—*J. A.* On an Echinus at Sunderland.—*Mr. R. Howse.*

We lately obtained a specimen of this species alive on the

spines of an Echinus at Cullercoats, but rather injured, and in a very sickly state. We placed it in a glass of fresh sea-water, hoping that it might recover, and display itself more distinctly; but in this we were disappointed, as it soon died, and being left unlooked at for a while had partially decayed. The animal was white, had a rather large foot, without operculum, and a rounded head with two cylindrical tentacles, and minute eyes at the (external or posterior) base. No portion of the shell was covered by the fleshy parts, but we are not prepared to say that, in a state of vigour, the animal has not the power of extending some part of the mantle or foot over it. In these particulars it does not differ much from the *Stylifer* described by Mr. A. Adams, from the coast of Borneo; but we cannot agree with Mr. Gray in placing this genus in the family *Naticidæ*, as the very large and peculiar disc in front of the head in *Natica* is entirely wanting here. The animal has much more the appearance of an *Eulima*.* The remains of the animal examined under a microscope did not show any denticulated tongue.

45. EULIMA, *Risso*.

1. E. DISTORTA, *Desh.*

Eulima distorta, Phil. Enum. Moll. Sic. ii. 135.

A beautiful fresh specimen of this interesting little shell was got at Whitburn by the Rev. G. C. Abbes.

The animal has two long subulate tentacles, with very large eyes at their posterior base; the foot is slender, much produced in front, and has a bilobed flap (the *mentum* of Lovén) on its upper surface. The body is yellow, beautifully variegated with carmine, which forms an irregular band on each side; the tentacles and foot, white. These are the prevailing colours of the genus, but the disposition of them is different in different species, and appears to be sufficiently permanent to be taken as a specific character. In *E. polita* the animal is white, excepting

* "*Eulima*. Animal proboscide longa præditum recondenda; lingua inermis?"—*Lovén, Index Moll. Scand.* Mr. Broderip states that Stylifer has a retractile proboscis, and the *Stylifer subulatus*, Brod., figured in Sowerby's Genera of Shells, greatly resembles an *Eulima*.

the tentacles and margin of the *mentum*, which are of a deep golden yellow. The liver, as seen through the shell, is green in *E. distorta*, and purplish in *E. polita*.

2. E. LINEATA, *Sow.*

Helix subulata, Mont. Test. Brit. Supp. 142 (small variety).

Rissoa subulata, Johns. in Berw. Club Proc. i. 272.

In shell-sand, rather rare, One specimen alive from the boats at Cullercoats.—*J. A.* One live and two dead specimens were dredged by Mr. R. Howse, off Whitburn.

The animal is white with two long subulate tentacles, approximating at the base, with the eyes immediately behind them. The foot extends a good deal before the head, and has a bilobed flap on the upper surface in front, which appears to be common to the genus, as we have observed it in all the British species. The head is seldom protruded beyond the shell, which, being transparent, the animal can easily see through.

Two species appear to be included under the name of *E. subulata*. The shell figured, and described by Donovan, which is much larger than this, and has several bands on the body whorl, is rare. It ought to retain the name of *E. subulata*, and is also the *Melania Cambessedesii* of Payraudeau. The smaller and much more common species has only two bands, placed close together in the centre of the body whorl, with occasionally a faint indication of another on the upper or lower margin. The shell is thinner and more transparent than in the larger species, the whorls less oblique, the lower one a little more ventricose, the aperture not so much contracted, and the columellar margin not quite so straight. This is probably the species called *E. lineata* by Mr. Sowerby, whose name we adopt, though we would gladly change it to *bilineata*, the better to express its distinguishing character. A species in the British Museum, from Madeira, comes very near to this, but has only one band.

46. SCALARIA, *Lamarck.*

1. S. COMMUNIS, *Lam.*

Turbo clathrus, Mont. Test. Brit. 296.

A single specimen was obtained from the fishing boats at Cullercoats.—*J. H. F.*

2. S. TURTONIS,* *Turt.*

Turbo Turtonis, Turt. Conch. Dict. 208, t. 27, f. 97.

One specimen found at Whitburn by the Rev. G. C. Abbes.

In order to form a correct judgment of the probability whether these two species were natives of our coast, or had come there by accident, we enquired of Mr. Bean if they had been found on the coast of Yorkshire. That gentleman informs us that he had never met with *Scalaria communis,* but that he had got several living specimens of *S. Turtonis* at Scarborough.

3. S. TREVELYANA, *Leach.*

Scalaria Trevelyana, Johns. in Berw. Club Proc. i. 263.

From deepest water (Coralline zone), rather rare.

This species was first published (but not described) by Mr. Winch in his list of the shells of Lindisfarne. *Annals of Phil., New Series,* 1822. It is the only *Scalaria* that has been found alive here; and though rare, has been occasionally got on most parts of the coast. The *Turbo clathrus* of Sir Cuthbert Sharp's list is most likely this shell.

47. CHEMNITZIA, *D'Orbigny.*

1. C. FULVOCINCTA, *Thomp.*

Turritella fulvocincta, Thomp. in Ann. Nat. Hist. v. 98.

Turbonilla rufa, " Phil." Lovén Ind. Moll. Scand. 18.

Two specimens have occurred in a worn state from the fishing boats.—*A. H.*

2. C. INDISTINCTA, *Mont?*

Turbo indistinctus, Mont. Test. Brit. Supp. 129?

In shell-sand at Tynemouth, rather rare.

The *Turbo indistinctus* of Montagu has not been very satisfactorily made out. The present species is what we have been accustomed to consider agreed best with his description, but we

* We give this name as it is written by Dr. Turton. If it be considered desirable to change the termination, it ought to be rendered *Turtonæ*, and not *Turtoni*, as it was named by Dr. Turton after his daughter, Miss Turton, who first pointed out its specific differences.

have seen a specimen of a nearly allied species, kindly submitted to our inspection, with other minute shells, by Mr. Barlee, which has "much finer longitudinal ribs or striæ," and on this account agrees better with Montagu's description; our species having the ribs scarcely finer than in his *T. interstinctus*, with which he compares it. We leave the matter for further investigation. A shell in the British Museum named "*T. indistinctus*, Mont.," appears to be a worn specimen of *C. fulvocincta*.

3. C. UNICA, *Mont.*

Turbo unicus, Mont. Test. Brit. 299, t. 12, f. 2.

In shell sand, rare. Tynemouth, Whitley, and Cheswick.—*J. A.*

4. C. NITIDISSIMA, *Mont.*

Turbo nitidissimus, Mont. Test. Brit. 299, t. 12, f. 1.

We obtained a specimen of this exquisite little shell out of sand from Cheswick, sent us by our friend, Dr. Johnston.—Though always described as smooth, and even appearing so under a common magnifier, on closer inspection with the microscope, we find the vestiges of delicate spiral striæ. The species has never been obtained alive, but in that state we have no doubt that it will be found to be distinctly striated.

5. C. ACICULA, *Phil.*?

Shell turreted, slender, cylindrico-subulate, tapering to a rather obtuse point, of a semi-transparent white, with eight smooth whorls, rather flattish, but well defined by a deeply-impressed suture; the first whorl is placed at right angles to the rest; the last whorl is a good deal rounded at the base. Aperture about one-fifth the length of the shell, ovate, scarcely angulated by the projection of the body whorl; outer lip thin; pillar lip nearly straight, slightly arched outwards in the centre, and rounded below; behind it is a slight impression, but no umbilicus. Length scarcely $1\frac{3}{4}$ tenths; breadth about one-fourth the length.

Eulima acicula, Phil. Enum. Moll. Sic. ii. 135, t. 9, f. 6?

This species come very near to the *Eulimella gracilis*, Jeff. in Ann. Nat. Hist. xix. 311 (*Eulima affinis*, Phil ?), but it is rather smaller, flatter in the whorls, and the apex is not so much produced, in consequence of the first whorl being a little more sunk in

the second. It has been got in the south of England by Mr. Jeffreys, Professor E. Forbes, and Mr. M'Andrew, but some little difference of opinion appears to exist as to what species it ought to be referred to, or whether it is undescribed. We have, therefore, thought it neeessary to insert a description.

Two specimens of this interesting addition to our Fauna have been found at Whitburn by the Rev. G. C. Abbes, and one, much worn, was dredged off the same place by Mr. R. Howse.

6. C. MACANDREI, *Forbes.*

Eulima Macandrei, Forbes, in Ann. Nat. Hist. xiv. 412, t. 10, f. 2.

Two specimens have been got from the fishing boats at Whitburn, by the Rev. G. C. Abbes, and one by Mr. R. Howse, who has also dredged it alive in seventeen fathoms water at the same place.

This and the preceding species have been referred to *Eulima*, and Professor E. Forbes has more recently proposed for them the genus *Eulimella*, but we prefer considering them to belong to *Chemnitzia*, from which they only differ in the more polished surface of the shell. The apical nucleus, and the form of the aperture, indicate their place in this genus, independently of the animal, which, according to our observations, is essentially the same in each.

48. ODOSTOMIA, *Fleming.*

1. O. UNIDENTATA, *Mont.*

Turbo unidentatus, Mont. Test. Brit. 324.

Odostomia plicata, Flem. Brit. Anim. 310. Hanley in Thorpe's Brit. Mar. Conch. xxxv. f. 13.

In shell-sand, Tynemouth and Cullercoats, rather rare. At the roots of corallines from the boats at Cullercoats and Whitburn.—*A. H.*

Much misunderstanding exists with respect to this species and the *Turbo plicatus* of Montagu, which no two conchologists, excepting where one has copied the other, have described alike. The description of Montagu is sufficiently characteristic of our shell; but Dr. Fleming reverses the two, with the remark that

"the descriptions had, by some accident, been intermingled in the Testacea Britannica." Specimens sent by Dr. Turton, under the name of *T. unidentatus*, and now in the Newcastle Museum, we find to be *O. pallida*, though his description in the Conchological Dictionary is correct, being a copy of Montagu's. The species described by Mr. Hanley under this name, in the Zoological Proceedings, and in Thorpe's "British Marine Conchology," is, as he informs us, the *Auricula conoidea* of Philippi; his *Odostomia plicata* being our *O. unidentata*. The *O. unidentata* of Macgillivray, and the figures given by Capt. Brown of his *Jaminia unidentata*, do not appear to belong to this species.

A variety, if not a distinct species, is found on our coast, rather narrower and more rounded at the base, and with a larger umbilicus. As we have only met with two rather worn examples, we shall not attempt to decide upon it at present.

2. O. TURRITA, *Hanley*.

Odostomia turrita, Hanley in Zool. Proc., 1843. Thorpe's Brit. Mar. Conch. xxxvi. f. 10.

In shell-sand at Tynemouth, rare.—*J. A.*

3. O. ALBELLA, *Lovén*.

Turbonilla albella, Lovén Index Moll. Scand. 19. "T. turrito-conica, tenuis, anfr. 6 rotundatis, apertura fere $\frac{1}{3}$ t. t., ovata, vix effusa, plica parva, $\frac{5}{1}\cdot\frac{6}{75}$m m."

In shell-sand, Tynemouth and Cullercoats, rare.—*J. A.*

Our shell agrees with the outline figure given by Professor Lovén in the "Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar," 1846, t. l. f. 11. It is broader and less turreted than the last. Both species have the tooth very small.

There is yet another shell, which we find at Tynemouth, nearly allied to these two, and to *O. plicata*, though apparently distinct. It is intermediate in form between *O. turrita* and *O. albella*, and has a stronger tooth. The species of this difficult genus are extremely perplexing, and require a careful study, to which their rarity, especially in a living state, presents a great obstacle.

4. O. PALLIDA, *Mont.*

Turbo pallidus, Mont. Test. Brit. 325, t. 21, f. 4.

In shell-sand at Tynemouth, rather rare.—*J. A.* At the roots of corallines brought in by the Cullercoats and Whitburn fishing boats.—*A. H*

The animal is of a pale yellowish colour.

5. O. NITIDA, *Alder.*

Odostomia nitida, Ald. in Ann. Nat. Hist. xiii. 326, t. 8, f. 5.

A single specimen was obtained in shell-sand from Tynemouth. It is perfectly distinct from any of the preceding.

6. O. INSCULPTA, *Mont.*

Turbo insculptus, Mont. Test. Brit. Supp. 129.

In shell-sand, Tynemouth and Cullercoats, rare.—*J. A.*

7. O. SPIRALIS, *Mont.*

Turbo spiralis, Mont. Test. Brit., 323, t. 12, f. 9.

In shell-sand, frequent. Occasionally found alive in pools among the rocks, and on corallines from the fishing boats.

This is the commonest species of *Odostomia* on our coast. The animal is white, and has the tentacles ear-shaped, or longitudinally folded, with the eyes at the internal base,—characters common to this as well as the preceding genus. The figure given in the Annals of Nat. Hist. xiii. t. 8, f. 13, is deficient in not displaying these characters. From the minuteness and transparency of the animal, the folds of the tentacles can only be seen in favourable lights.

8. O. INTERSTINCTA, *Mont.*

Turbo interstinctus, Mont. Test. Brit., 324, t. 12, f. 10.

In shell-sand, Tynemouth and Cullercoats, rather rare. On corallines from the fishing boats, Whitburn.—*Mr. R. Howse.*

In a fresh state the shell has the furrows between the ribs more deeply impressed at their termination towards the base of the body whorl, giving the appearance of a line of punctures, with sometimes a fainter one below it. This is not usually seen in sand specimens, and was consequently overlooked by Montagu. A variety is not unfrequently found in sand, which is more produced than the normal form, and may possibly turn out to be a distinct species, but the worn state of shells found in sand is unfavourable to the appreciation of minute characters.

Mr. Bean has distinguished it in his cabinet under the MS. name of *O. costata.*

9. O. OBLIQUA, *Alder.*

Odostomia? obliqua, Ald. in Ann. Nat. Hist. xiii. 327, t. 8, f. 12.

In shell-sand, Tynemouth, rare.—*J. A.*

[In the preceding family, to which we have not ventured to give a name, we have brought together, provisionally, those genera formerly considered to belong to the *Turbinidæ*, whose animals have a retractile proboscis. In the four following families, the animals have the head more or less proboscidiform, but there is no real proboscis.]

FAMILY. LITTORINIDÆ, *Gray.*

49. RISSOA, *Fréminville.*

1. R. COSTATA, *Adams.*

Turbo costatus, Mont. Test. Brit. 311, t. 10, f. 6.

Rissoa exigua, Mich. Desc. du Rissoa, 18, f. 29, 30.

In shell-sand, frequent. It has not been found alive here, but, like most of the small species found in sand, it probably inhabits the Laminarian zone beyond low-water mark.

2. R. STRIATA, *Adams.*

Turbo striatus, Mont. Test. Brit. 312.

Rissoa minutissima, Mich. Desc. du Rissoa, 20, t. 27, 28.

In pools among the rocks, frequent. This is one of the commonest of the shells thrown up in sand.

Pyramis candidus and *P. discors* of Brown are apparently only varieties of this very common and widely diffused species.

3. R. PARVA, *Da Costa.*

Turbo parvus, Mont. Test. Brit. 310.

In shell-sand, common; and alive beyond low-water mark. This species is found alive, though sparingly, on small sea-weeds among the rocks left bare by the tide. Its principal locality appears to be beyond low-water mark, and a small variety, with a thinner and more glossy shell, is not uncommon on corallines, from about twenty fathoms water.

When fresh, the shell is usually striated between the ribs on the lower portion, a character that has been overlooked in descriptions.

4. R. INCONSPICUA, *Alder.*

Rissoa inconspicua, Ald. in Ann. Nat. Hist. xiii. 323, t. 8, f. 6, 7.

On corallines from deepish water at Cullercoats, rather rare. Whitburn.—*Mr. R. Howse.*

5. R. PUNCTURA, *Mont.*

Turbo punctura, Mont. Test. Brit. 320, t. 12, f. 5.

On corallines from ten to twenty fathoms water, and in shell-sand; frequent.

6. R. SEMISTRIATA, *Mont.*

Turbo semistriatus, Mont. Test. Brit. Supp. 136.

Not uncommon in shell-sand, and occasionally found alive at the roots of corallines from the fishing boats.

7. R. INTERRUPTA, *Adams.*

Turbo interruptus, Mont. Test. Brit. 329, t. 20, f. 8.

On small sea-weeds in pools between tide-marks, abundant. The shell is common in sand.

8. R. CINGILLUS, *Mont.*

Turbo cingillus, Mont. Test. Brit. 328, t. 12, f. 7.

In shell-sand, rare.

9. R. UNIFASCIATA, *Mont.*

Turbo unifasciatus, Mont. Test. Brit. 327.

Rissoa fulva, Mich. Desc. du Rissoa 15, f. 17, 18.

Among sea-weeds, between tide-marks, at Whitley, rare.—*J. H. F.*

10. R. ULVÆ, *Penn.*

Turbo ulvæ, Mont. Test. Brit. 318.

In muddy estuaries, common. Holy Island, Budle Bay, Jarrow Slake, mouth of the Tees, &c.

11. R. VENTROSA, *Mont.*

Turbo ventrosus, Mont. Test. Brit. 317, t. 12, f. 13.

From sand and sea-weeds at Cullercoats, very rare.

The *Rissoa pulla,* Brown Conch. Illust. 13, t. 8, f. 25, "found on the sands at Holy Island," we have not been able to make out; from the figure it appears to be a distortion.

12. R. ? DIAPHANA, *Alder.*

Rissoa ? glabra, Ald. in Ann. Nat. Hist. xiii. 325, t. 8, f. 1-4.

On sea-weeds in pools among the rocks at Cullercoats, rare.—*J. A.*

When this species was published in the Annals of Natural History, it was referred to the *Rissoa glabra* of Brown's Illustrations, but, since that time, we have seen, through the favour of Mr. Barlee, an allied species from the south coast, that more nearly agrees with Captain Brown's figure, and we have, therefore, now given this the name of *diaphana.* It is not a true *Rissoa,* as we have already pointed out. The peculiar character of the animal requires that it should be raised to the rank of a genus.

50. LITTORINA, *Férussac.*

1. L. LITTOREA, *Linn.* (common periwinkle.)

Turbo littoreus, Mont. Test. Brit. 301.

In shallow pools and on stones within tide-marks, common, especially at and a little above half-tide level. A red variety is not uncommon on some parts of the coast.

2. L. RUDIS, *Maton.*

Turbo rudis, Mont. Test. Brit. 304.

On rocks and in pools near high-water mark, common. Beautifully banded varieties (*L. zonata,* Bean) occur at Newbiggin and Bamborough, as well as on some other parts of the coast.

3. L. RUDISSIMA, *Bean.*

Littorina rudissima, Bean in Thorpe's Brit. Mar. Conch. 266.

On rocks, bare of sea-weed, at and a little above high-water mark, abundant ; frequently found in crevices on the face of a cliff.

The species of this most difficult genus are so extremely variable, and approach each other so closely in the different varieties, that we are unwilling to speak very decidedly concerning them. The present, though very nearly resembling *L. rudis,* has the shell always thinner and smaller, and is distinguished from the young of that species by having the columella not so broad, nor so much produced and angulated at the base. It has also the spiral ridges generally very strong and conspicuous; but in this

respect it is extremely variable, and is sometimes quite smooth. It undergoes all the varieties of colour and banding found on the last species, besides which we have obtained, at Newbiggin, a black, and a tessellated variety, coming so near to *L. tenebrosa*, that we hesitate to call them distinct. The latter is generally found in mud, but we are inclined to think that the *Turbo tenebrosus*, and *T. jugosus* of Montagu are probably the two extreme limits that this very variable shell undergoes.

4. L. NEGLECTA, *Bean.*

Littorina saxatilis, "Bean," Johns. in Berw. C. Proc. i., 268.

Littorina neglecta, Bean, in Thorpe's Brit. Mar. Conch. 266.

On rocks near low-water mark, bare of sea-weed, but covered with *Balani* and muscles.

The habitat of this little species is different from that of the preceding, being always nearer low-water mark. This, with the difference of form and size, induces us to think it distinct.

We have taken from the body of this species, embryos, well developed and covered with a shell.—*A. H.*

It was first described by Dr. Johnston under the name of *saxatilis*, given it in manuscript by Mr. Bean. In consequence of this name having been used by Olivi for another species (probably the following), Mr. Bean subsequently changed it to *neglecta*, under which name he has described it among his new species in Thorpe's "Brit. Marine Conchology." Having omitted to mention that it had been described before, the species appears twice in that work :—viz., under the name of *L. saxatilis*, in the Addenda, and of *L. neglecta*, in the Supplement.

5. L. PETRÆA, *Mont.*

Helix petræa, Mont. Test. Brit. 403.

Turbo cærulescens, Lam. Anim. s. Vert. 2nd Ed. ix. 217.

On rocks at and above high-tide level, frequent, especially in crevices of the cliffs, where it nestles in company with *L. rudissima*, beyond the reach of the sea, excepting the dashing of the spray, and the high water of spring tides.

There can be little doubt that the *T. cærulescens* of Lamarck, of which we have specimens from two localities in the Mediterranean, is a variety of this species, though Philippi, in his description of the animal, does not mention the milk-white

band in front of the foot by which our species is distinguished, and his description altogether corresponds more nearly with that of *L. rudissima.*

Philippi enumerates seven synonyns of this species, without taking into account our English name, and the *Turbo neritoides* of Linnæus with which he is now inclined to indentify it.

The *Turbo ziczac* found by Lady Wilson near Sunderland, and stated to differ from the West Indian specimens in wanting the ziczac markings, is most likely only a variety of this species; at least a specimen so named in the cabinet at Wallington, which we had the opportunity of examining through the kindness of the late Sir John Trevelyan, Bart., certainly belongs to *L. petræa.*

6. L. RETUSA, *Lam.*

Nerita littoralis, Mont. Test. Brit. 467.

Littorina neritoides, Johns. in Berw. C. Proc. i. 269.

On sea-weeds, among the rocks near high-water mark, common.

The *Turbo retusus* and *T. neritoides* of Lamarck, are undoubtedly only different forms of the *Nerita littoralis* of Linnæus, as we have satisfied ourselves by an examination of the Lamarckian specimens. As *T. neritoides,* Linn., is not considered to belong to this species, we adopt the former name. *T. obtusatus,* Linn., we are assured by Mr. Hanley, is distinct.

The *Turbo aureus* of Brown (Conch. Illust. 2nd Ed. 17, t. 10, f. 23), found by Sir Walter C. Trevelyan, Bart., at Seaton, Northumberland (qu. Durham?), is referred in the appendix to the genus *Margarita,* and in the description of the plates is called a *Littorina.* We think it scarcely belongs to either of these genera.

51. LACUNA, *Turton.*

1. L. PALLIDULA, *Da Costa.*

Nerita pallidula, Mont. Test. Brit. 468.

On sea-weeds between tide-marks, not uncommon.

2. L. PUTEOLA, *Turt.*

Lacuna puteola, Turt. in Zool. Jour. iii. 191.

On sea-weeds and in shell-sand, rather rare.

The *Turbo puteolus* of Turton, in his "Conchological Dictionary," and the *Lacuna puteola* of the same author, in the "Zoological Journal," do not appear to be the same species. It is to the latter that we refer our shell.

3. L. VINCTA, *Mont.*

Turbo vinctus, Mont. Test. Brit. 307, t. 20, f. 3.

Var. 1. *Turbo quadrifasciatus*, Mont. Test. Brit. 328, t. 20, f. 7.

Var. 2. *Turbo canalis*, Mont. Test. Brit. 309, t. 12, f. 11.

On sea-weeds at and below low-water mark.

We cannot find any permanent character to distinguish these three supposed species of Montagu, and have therefore united them. The shell is extremely variable both in form and markings. The more elongated form, both banded and unbanded (*T. vinctus*, and *T. canalis*), is rare, but the short, banded variety (*T. quadrifasciatus*) is abundant on the fronds of *Laminaria digitata*, at and beyond low-water mark.

4. L. LABIOSA *Lovén ?*

Shell ovate-oblong, tapering, whitish, rather solid, with five whorls, very slightly convex, the last occupying rather more than half the shell, and rounded, or very slightly carinated below. Outer lip a little expanded, and thin at the edge, within which it is thickened by a callosity which extends round the base of the aperture uniting with the expanded columellar margin below. Umbilical groove small. Length $\frac{1}{4}$ inch, breadth $1\frac{1}{2}$ tenths.

Lacuna labiosa, Lovén Index Moll. Scand. 23 ?

One specimen of this new species has occurred in sand at Cullercoats. The shell is thicker and more slender than *L. vincta*, and is somewhat intermediate between it and *L. crassior*. It agrees very well with Professor Lovén's description, but is smaller, and, as we have not seen authentic specimens, we cannot speak with certainty of the species to which we have referred it. It appears, however. to be distinct from any of the other British *Lacunæ*.

5. L. CRASSIOR, *Mont.*

Turbo crassior, Mont. Test. Brit. 309, t. 20, f. 1.

In sand at Tynemouth, Cullercoats, and Whitburn, rare.—Alive in pools among the rocks at Cullercoats.—*A. H.*

52. SKENEA, *Fleming.*

1. S. PLANORBIS, *Fab.*

   Helix depressa, Mont. Test. Brit. 439, t. 13, f. 5.

   On small sea-weeds between tide-marks, common.

2. *S. divisa,* "*Adams?*" Flem.

   Skenea divisa, Flem. Brit. Anim. 314.

   On small sea-weeds between tide-marks, rare.—*J. A.*

FAMILY. TROCHIDÆ, *D'Orbigny.*

53. TROCHUS, *Linnæus.*

1. T. MAGUS, *Linn.*

   Trochus magus, Mont. Test. Brit. 283.

   Two or three specimens have been found on the beach at Seaton Carew by Miss Elizabeth Backhouse, and it is also in Sir Cuthbert Sharp's list of Hartlepool shells; but we have no record of its occurrence on any other part of the coast. It is a doubtful native of the north-eastern coast of Britain, and may have been introduced in ballast. Mr. Bean informs us that one dead shell has been found at Scarborough.

2. T. CINERARIUS, *Linn.*

   Trochus cinerarius, Mont. Test. Brit. 284.

   In pools among the rocks between tide-marks, common.

3. T. TUMIDUS, *Mont.*

   Trochus tumidus, Mont. Test. Brit. 280, t. 10, f. 4.

   From deepish water, frequent.

4. T. MILLEGRANUS, *Phil.*

   Trochus Martini, Smith in Wern. Mem. viii. 51, t. 1, f. 26. Thorpe Brit. Mar. Conch. 164, f. 36.

   Two or three specimens have been obtained from the deep-water fishing boats by Mr. W. King, and Mr. R. Howse. Mr. Embleton has also got it at Embleton.

5. T. ZIZYPHINUS, *Linn.*

   Trochus zizyphinus, Mont. Test. Brit. 274.

Not uncommon in the Laminarian zone, especially in the north of Northumberland and south of Durham; less frequent in the intermediate district. Capt. Brown figures "a beautiful smooth variety dredged in deep water, off Sunderland, by Mr. Dixon of Bishop Wearmouth."

54. MARGARITA, *Leach.*

1. M. HELICINA, *Fab.*

Helix margarita, Mont. Test. Brit. Supp. 143.

On sea-weeds, and under stones, near low-water mark, frequent. Common on the northern parts of the coast.

FAMILY. NERITIDÆ, *D'Orbigny.*

Neritina fluviatilis, Linn., has been frequently met with on our coast, but as it is a common ballast shell, we attribute it to this source. Mr. Hogg states that he found it in the vicinity of Stockton, but he is not quite certain of its having been alive. It is found in the Ouse at York.

FAMILY. TURRITELLIDÆ.

55. TURRITELLA, *Lamarck.*

1. T. TEREBRA, *Linn.*

Turbo terebra, Mont. Test. Brit. 293.

On weedy ground in a few fathoms water, not uncommon, but seldom thrown upon the shore, excepting in a very young state, in which form it has been taken for a distinct species, and called *Turritella Lamarckii.* It is sometimes brought up pretty plentifully in the trawl-nets by the fishermen at Cullercoats.

The animal, from its broad proboscidiform head, and short lateral tentacles, bears a great resemblance to *Cerithium.* It is very shy and sluggish, and will lie for days together without shewing itself beyond the mouth of the shell, or attempting to crawl about.

FAMILY. CERITHIADÆ, *Fleming.*

Cerithium reticulatum, Da Costa, has been frequently found on

the shore near Sunderland and Whitburn, by the Rev. G. C. Abbes and Mr. Howse, but is supposed to have come from ballast. It has also been found by Miss E. Backhouse at Seaton.

Cerithium tuberculare, Mont. One specimen found on Whitley sands.—*J. H. F.* Perhaps from the same source as the last.

Cerithium fuscatum, Brown (*Turbo tuberculatus*, Penn. Brit. Zool. t. 82, f. 111), is stated by Mr. Pennant to be "from the coast of Northumberland." We think there must be some mistake in this, or it may be a foreign shell thrown by accident on the coast.

Cerithium cancellatum, Brown (Illust. Rec. Conch. 2d Ed. 9, t. 5, f. 64), is also stated to have been found "on the Northumberland coast at Holy Island." We do not know it, but are inclined to think that none of the *Cerithia* are indigenous to our coast.

The *Strombus costatus* of Sir C. Sharp's list is also a *Cerithium*, but it is now generally believed that this shell, common in foreign collections, has been introduced into the British Fauna by mistake. The shell found at Hartlepool was most likely *Cerithium reticulatum*.

56. APORRHAIS, *(Da Costa) Dillwyn.*

1. A. PES-PELECANI, *Linn.*

Strombus pes-pelecani, Mont. Test. Brit. 253.

From deepish water, not common.

Family. Muricidæ, *Fleming.*

57. PLEUROTOMA, *Lamarck.*

1. P. TERES, *Forbes.*

Pleurotoma teres, Forbes in Ann. Nat. Hist. xiv. 412, t. 10, f. 3.

A specimen of this fine species was got at Whitburn by the Rev. G. C. Abbes, and Mr. R. Howse also dredged a young shell in seventeen fathoms off the same place.

2. P. COSTATA, *Penn.*

Murex costatus, Mont. Test. Brit. 255.

In shell-sand from different parts of the coast, not rare.

3. P. Boothii, *Smith.*

Fusus Boothii, Smith in Wern. Mem. viii. 50, t. 1, f, 1.

A single specimen has been obtained by the Rev. G. C. Abbes, at Whitburn.

4. P. linearis, *Mont.*

Murex linearis, Mont. Test. Brit. 261, t. 9, f. 4.

In shell-sand frequent, and occasionally on corallines from the fishing boats.

5. P. rufa, *Mont.*

Murex rufus, Mont. Test. Brit. 263.

In shell-sand, not rare. The Rev. G. C. Abbes and Mr. R. Howse have occasionally got it alive.

6. P. Trevelyana, *Turt.*

Pleurotoma Trevelyanum, Turt. in Mag. Nat. Hist. vii. 351.

From deepish water, rare. Cullercoats.—*J. A.* and *A. H.* Whitburn.—*Rev. G. C. Abbes.* One specimen was dredged in 17 fathoms off the latter place by Mr. R. Howse.

58. FUSUS, *Bruguière.*

1. F. turricula, *Mont.*

Murex turricula, Mont. Test. Brit. 262, t. 9, f. 1.

From the fishing boats, and in sand, not uncommon. Dredged by Mr. Howse, off Whitburn.

2. F. clathratus, *Linn.*

Murex Bamffius, Mont. Test. Brit. Supp. 117.

From deep water, not rare. Occasionally met with in the fishing boats at Cullercoats, as well as in the deep-water (or five-men) boats. Mr. R. Howse dredged a few alive in 17 fathoms, off Whitburn. The shell (but generally of small size) is found in sand.

3. F. Barvicensis, *Johns.*

Fusus Barvicensis, Johns. in Edin. Phil. Journ. xiii. 225. Berw. Club Proc. 1. 235.

Fusus asperrimus, Brown Illust. Rec. Conch. 8, t. 6, f. 2. ?

From deep water, rare. A fine specimen, nearly an inch long, was dredged in 60 fathoms water by Mr. R. Howse.

4. F. GRACILIS, *Da Costa.*

Murex corneus, Mont. Test. Brit. 258.

Fusus Islandicus, "Martini," King in Ann. Nat. Hist. xviii. 246.

In the coralline and deep-water zones, frequent. The variety from deep water is more ventricose than the common form, and has the epidermis thinner, smoother, and sometimes of a reddish colour. The shell figured by Captain Brown in his "Illustrations of the Recent Conchology of Great Britain," t. 6, f. 11, 12, found by Sir W. C. Trevelyan, Bart., at Seaton, appears to be an unusually short specimen of this variety.

Much confusion has arisen in the name of this species from the circumstance of Linnæus having included more than one shell in his *Murex corneus;* but as it is now agreed that the name should belong to the Mediterranean shell (*Fusus lignarius* of Lamarck), and being of opinion that our species is not the *Fusus Islandicus* of Chemnitz, to which it has lately been referred, we follow Professor Lovén in adopting Da Costa's name, the earliest undisputed appellation.

5. F. PROPINQUUS, *n. s.*

Shell fusiform, white, covered with a brown epidermis, striated spirally; the striæ rather variable, but generally deep and distant on the upper whorls, more closely set on the lower, and often rising into ridges towards the base of the shell. Whorls 8, flattish, or very slightly convex, and a little tumid above at the suture; they are broader in proportion to their height than in the last species, and consequently the spire is a little less produced. The nucleus, forming the apex of the shell, consists of two or three very small whorls, the first very little raised, and only to be seen from above; the apex is rather slender, not mammillated, and generally stained of a ferruginous colour; aperture oval, rather contracted, and ending in a short canal of moderate width, a little bent towards the left side; outer lip thin; pillar smooth, a little arched inwards in the centre, and produced in old shells into an obtuse rounded angle towards the entrance of the canal. Length $1\frac{1}{2}$ in., breadth $\frac{1}{2}$ in.

A variety from deep water is shorter in the spire, and more tumid in the body whorl, and has the canal very much twisted to the left side. The epidermis is thin, pale yellowish horn-coloured, and hispid. The apex is frequently incrusted with black. Animal white.

Found in the same situations with the last, but rare.

This species very much resembles *F. gracilis* but never grows to half the size, and may readily be distinguished from it by an examination of the apex. The nucleus of *F. propinquus* consists of two or three small compact whorls, while that of *F. gracilis* has only about a whorl and a half, which are large, and rather produced at the top, giving the apex a mammillated appearance. The embryos of these two species must, therefore, differ as much from each other as those of *F. Turtoni* and *F. Norvegicus*. The shell of *F. propinquus* is rather more tumid, and the whorls rather flatter in the middle, and more raised towards the suture than in *F. gracilis*: the striæ also are closer, the aperture more contracted towards the canal, and the latter a little more bent. The variety from deep water, dredged by Mr. Howse in sixty fathoms, has much the aspect of a distinct species, but a shell in that gentleman's possession seems to unite it with the normal form. Mr. Howse has figured the variety in the Ann. of Nat. Hist. vol. xix., t. 10, f. 5.

6. F. Islandicus, *Chemn.*

Fusus Berniciensis, King in Ann. Nat. Hist. xviii. 246.

Tritonium Islandicum, Lovén Ind. Moll. Scand. 11.

Var. *Buccinum Sabini*, Gray in Parry's 1st Voyage, 211 ?

Two specimens of this rare species have been obtained from the deep-water fishing boats by Mr. King.

Through the kindness of Mr. Gray we have had the opportunity of examining his specimens of *B. Sabini*, which appears to be a small variety of this, but the species of this group come so very near to each other, that we should not like to speak decidedly. Further investigation induces us to consider our species the true *Fusus Islandicus* of Chemnitz.

7. F. Turtoni, *Bean.*

Fusus Turtoni, Bean in Mag. Nat. Hist. vii. 493, f. 61. King in Ann. Nat. Hist. xviii. 245. Howse in Ann. Nat. Hist. xix. 162, t. 10, f. 6—10.

From deep water, rare. A few specimens of this fine species have been obtained from the fishermen by Mr. W. King and Mr. R. Howse. The ova capsules and young have also been got by the latter and are figured by him in the Annals of Natural History.

8. F. NORVEGICUS, *Chemn.*

Fusus Norvegicus, King in Ann. Nat. Hist. xviii. 244. Howse in Ann. Nat. Hist. xix. 162, t. 10, f. 1—3.

From deep water, rare. This, with the last, was first noticed to be an inhabitant of our coast by Mr. King, who has procured some beautiful specimens from the fishermen. Specimens have likewise been got by Mr. R. Howse, who dredged the ova capsules in sixty fathoms water, off the coast of Durham. *See* Ann. Nat. Hist., as above.

9. F. ANTIQUUS, *Linn.*

Murex antiquus, Mont. Test. Brit. 257.

Common in the coralline and deep-water regions on all parts of the coast. The deep-water variety is thinner and more ventricose than the other, and generally has the outer lip reflected. Our largest specimen from the coralline zone (got at Newbiggin), measures $7\frac{1}{4}$ inches in length, and $3\frac{1}{2}$ in breadth. Dr. Johnston, however, has a specimen, found by Miss I. Forster near Alemouth, which is 8 inches long, and $3\frac{1}{2}$ broad. (*Berw. Club. Proc. i.* 234.) The largest from deep water, as mentioned by Mr. King, is 7 inches long and nearly 5 broad. These specimens from our coast appear to be the largest that have been recorded.

10. F.? MINIMUS, *Mont.*

Buccinum minimum, Mont. Test. Brit. 247, t. 8, f. 2.

In shell-sand at Tynemouth and Cullercoats, rare.—*J. A.*

Fusus punctatus, Brown Illust. Rec. Conch. 7, t. 5, f. 56, 57, found by Capt. Brown at Holy Island, we have not been able to make out.

MUREX, *Linnæus.*

M. erinaceus, Linn. Two or three dead shells of this species have occurred, but we think they are probably from ballast.

FAMILY. BUCCINIDÆ, *Fleming.*

59. TRICHOTROPIS, *Broderip and Sowerby.*

1. T. BOREALIS, *Brod. and Sow.*

Trichotropis borealis, Brod. and Sow. in Zool. Jour. iv. 375.

Trichotropis umbilicatus, Thorpe Brit. Mar. Conch. 209, f. 54.

In deepish water, rare. We have got two or three shells of this species from haddocks, and some fine specimens have been obtained from the fishing boats at Whitburn by the Rev. G. C. Abbes. Mr. Howse also dredged it at that place in 17 fathoms.—Found alive in the fishing boats at Cullercoats.—*A. H.*

60. PURPURA, *Bruguière.*

1. P. LAPILLUS, *Linn.*

Buccinum lapillus, Mont. Test. Brit. 239.

On rocks between half-tide and high-water mark, common.

61. BUCCINUM, *Linnæus.*

1. B. UNDATUM, *Linn.* (common waved Whelk).

Buccinum undatum, Mont. Test. Brit. 237.

Common on all parts of the coast.

The varieties of this shell are numerous. Three principal ones occur on this coast, inhabiting different zones of depth, together with a few other forms of less importance.

Var. 1. Shell rather thin and slender, with the volutions rounded, and a strong hairy epidermis : inside white, occasionally yellowish or purple. From deep water, generally on a muddy bottom.

2. Shell thick and strong : whorls not much raised and strongly undulated : epidermis generally wanting : inside white or rarely yellowish. From the coralline zone on rocky ground.

3. Shell moderately strong, (or sometimes rather thin), short, and ovate: the whorls flattish, and the undulations obsolete: epidermis variable, sometimes wanting: inside deep purplish brown or yellow, rarely white. At low-water mark, generally among rocks.

Buccinum carinatum of Turton, an accidental variety of this species, has been found at Sunderland by the Rev. Mr. Law; as has also another accidental variety, or lusus, agreeing pretty nearly with the *Buccinum acuminatum* of Broderip. The specimens were presented by Mr. Law to the Newcastle Museum.

2. B. OVUM, *Turton.*

Buccinum ovum, Turt. in Zool. Journ. ii. 366, t. 13, f. 9.

A dead and rather worn specimen of this shell has been got from the fishing boats by Mr. W. King.

62. NASSA, *Lamarck.*

1. N. RETICULATA, *Linn.*

Buccinum reticulatum, Mont. Test. Brit. 240.

From the fishing boats, Cullercoats.—*J. H. F.* Whitburn.—*Rev. G. C. Abbes.* Sunderland.—*Mr. W. Backhouse.*

The fresh state of some of Mr. Abbes's specimens shew them to have been either living or recently dead shells; but as this species is common in ballast, it must be received with caution. It is in Sir C. Sharp's Hartlepool list.

2. N. INCRASSATA, *Müll.*

Buccinum macula, Mont. Test. Brit. 241, t. 8, f. 4.

On the rocky parts of the coast at and beyond low-water mark, common. The shell is abundant on most of our sandy shores.

FAMILY. CYPRÆIDÆ, *Gray.*

63. CYPRÆA, *Linnæus.*

1. C. EUROPÆA, *Mont.*

Cypræa Europæa, Mont. Test. Brit. Supp. 88.

The shell of this species is thrown up very plentifully on our sands, and it is occasionally found alive, though rarely, among the rocks at spring tides. Its habitat appears to be a little

below low-water mark. The plain variety only is found on this coast, which is the *C. arctica* of Montagu in the "Testacea Britannica." He afterwards united it with *C. Europæa* in the Supplement.

Family. Naticidæ, *Gray.*

64. NATICA, *Adanson.*

1. N. catena, *Da Costa.*

Nerita glaucina, Mont. Test. Brit. 469.

Natica monilifera, Lam. Anim. s. Vert. 2nd Ed. viii. 638.

On sandy shores, not common. Embleton Bay, rare.—*Mr. R. Embleton.* Seaton Carew.—*Mr. W. Backhouse.* Whitburn.—*Rev. G. C. Abbes.*

2. N. Alderi, *Forbes.*

Nerita glaucina, var. B., Turt. Conch. Dict. 125.

Natica Alderi, Forbes Mal. Monen. 31, t. 2, f. 6, 7. Thorpe Brit. Mar. Conch. 148, f. 82.

From the coralline zone, common. Frequently met with in the stomachs of haddocks.

We have seldom, if ever, observed this species cast on shore. It seems to live in deepish water on our coast, though on the western coast of Scotland near Ardrossan it inhabits the sand near low water mark, and is thrown up plentifully on the beach along with *N. catena.* We have observed that several other mollusks inhabit shallower water on the western coast of Great Britain than they do with us.

The Rev. G. C. Abbes and Mr. R. Howse have met with the plain variety at Whitburn.

3. N. intricata, *Don.*

Nerita intricata, Don. Brit. Shells, t. 169.

From the fishing boats, Cullercoats.—*J. H. F.*

4. N. Montagui, *Forbes.*

Nerita rufa, Mont. Test. Brit. Supp. 150, t. 30, f. 3? (excl. var.)

Natica Montagui, Forbes Mal. Monen. 32, t. 2, f. 3-5.

From the coralline and deep-water zones, rather rare, occasionally met with in the fishing boats at Cullercoats and Whitburn. Mr. Howse dredged several living specimens in seventeen

fathoms at Whitburn, and has also got it in sixty fathoms by deep-water dredging off the Durham coast.

5. N. GRŒNLANDICA, *Beck.*

Natica Grœnlandica, "Beck," Möller Index Moll. Grœnl. 7.

Natica livida, Bean in Thorpe's Brit. Mar. Conch. 265, f. 55.

In deep water, rare. Obtained by Mr. W. King from the fishing boats, and afterwards dredged alive by him in fifty fathoms. Mr. R. Howse has also got a few specimens from the boats and by deep-water dredging.

6. N. HELICOIDES, *Johns.*

Natica helicoides, Johns. in Berw. Club Proc. i. 69.

Very rare. Two specimens have been met with by Mr. R. Howse from the fishing boats at Sunderland.

FAMILY. VELUTINIDÆ, *Gray.*

65. VELUTINA, *Fleming.*

1. V. LÆVIGATA, *Penn.*

Helix lævigata, Mont. Test. Brit. 382.

On large shells and stones from the coralline zone, frequent.

2. V. PLICATILIS, *Müll.*

Bulla flexilis, Mont. Test. Brit. Supp. 168. Laskey in Wern. Mem. i. 396, t. 8, f. 6.

In shallow water, rare. We have got two individuals from the stomachs of flat-fish, and one was obtained some years ago by Mr. Wm. Backhouse among the rocks at the "Bear's Back," Cullercoats. The Rev. G. C. Abbes and Mr. R. Howse have since got several specimens, at Whitburn.

3. V.? OTIS, *Turt.*

Helix otis, Turt. Conch. Dict. 70.

A number of specimens of this interesting little species were got several years ago on the rocks between tide marks on the Marsden coast, particularly on the sides of the great rock. Since that time we have frequently looked for it in vain. The animal is transparent white, and rather large for the shell, within which it can scarcely be withdrawn: the tentacles are very short and triangular; the eyes are immersed in the tentacles apparently towards the inner base, but, from the transparency of

the latter, are seen on either side. The muzzle is very large and broadly bilobed. This animal evidently is very different from that of *Velutina lævigata*, but the drawings we made are too imperfect to establish a generic character upon.*

66. LAMELLARIA, *Montagu.*

1. L. PERSPICUA, *Linn.*

Bulla haliotoidea, Mont. Test. Brit. 211, t. 7, f. 6.

In shallow water, rare. Several specimens have been got from the fishing boats at Whitburn, by the Rev. G. C. Abbes. The shell has also been found cast on shore at Whitley.—*J. H. F.*

2. L. TENTACULATA, *Mont.*

Lamellaria tentaculata, Mont. in Linn. Trans. xi. 186, t. 12, f. 5, 6.

Coriocella tentaculata, Johns. in Berw. Club Proc. i. 275.

Among rocks at low-water mark, Cullercoats. Rather rare.

ORDER. SCUTIBRANCHIATA, *Cuvier.*

FAMILY. FISSURELLIDÆ, *D'Orbigny.*

67. EMARGINULA, *Lamarck.*

1. E. FISSURA, *Linn.*

Patella fissura, Mont. Test. Brit. 490.

From the fishing boats, rare. The shell is occasionally found in sand.

68. PUNCTURELLA, *Lowe.*

1. P. NOACHINA, *Linn.*

Fissurella noachina, Thorpe Brit. Mar. Conch. 134, f. 78.

We got a living example of this species adhering to a *Fusus antiquus* brought in by the fishermen at Cullercoats in 1842. Mr. W. King subsequently dredged an individual "in 50 fathoms water 60 miles to the east of the north coast of Durham." One or two dead and worn shells have been got from the deep-water fishing boats.

* While these sheets are going through the press, we have received from Mr. Gray, of the British Museum, his valuable "List of the Genera of Recent Mollusca," in which we observe that the genus *Otina* is proposed for this species.

The animal scarcely differs from that of *Emarginula*, having similar short appendages on the sides between the foot and cloak. In our individual there were five on each side.

Captain Brown mentions the Northumberland coast as a habitat of *Fissurella Græca*, but we think this must be a mistake.

Family. Calyptræidæ, *Gray.*

69. CAPULUS, *Montfort.*

1. C. hungaricus, *Linn.*

Patella ungarica, Mont. Test. Brit. 486.

From deepish water, rather rare, and usually of small size.

Order. CYCLOBRANCHIATA, *Cuvier.*

Family. Patellidæ, *D'Orbigny.*

70. PATELLA, *Linnæus.*

1. P. vulgata, *Linn.* (common limpet).

Patella vulgata, Mont. Test. Brit. 475.

On the rocks between tide-marks, common.

In the neighbourhood of our fishing villages the limpet has become much less common than formerly, in consequence of the great numbers that are gathered for bait. Large-sized limpets are rarely now to be met with on the rocks at Tynemouth and Cullercoats. A very conical variety, with coarse ribs, is not uncommon at Holy Island, and other parts of the north of Northumberland; this is the "var. 4, conica" of Brown's Illust. t. 20, f. 5.

2. P. athletica, *Bean.*

Patella athletica, Bean in Thorpe's Mar. Conch. 264, f. 101.

Patella vulgata, var. 3, *albumina*, Brown Illust. Rec. Conch. 63, t. 20, f. 12-14.

On rocks close to low-water mark, rather rare.

"I first noticed this very beautiful variety on rocks at Cullercoats, near Tynemouth, Northumberland, in 1810.."—*Captain Brown.*

In some parts of England we have seen this limpet range much higher up between tide-marks than it does on our coast, where it is scarcely to be gathered but at spring tides. On the

southern coast, too, there is frequently an intermediate form between this and the last, which looks very like a hybrid, but with us they keep constantly distinct. The fishermen recognise the difference between them, and call this the *horse-limpet*, rejecting it as too tough for bait.

3. P. PELLUCIDA, *Linn.* (Blue-rayed Limpet.)

Patella pellucida, Mont. Test. Brit. 477.

On the fronds of *Laminaria digitata* at and beyond low-water mark, common.

4. P. LÆVIS, *Penn.*

Patella cærulea, Mont. Test. Brit. Supp. 152.

At the roots, and occasionally on the stems, of *Laminaria digitata*, common.

Great difference of opinion has always existed as to whether or not this is a distinct species from the last. As far as our observations go, we are inclined to think it is. Professor Lovén remarks that this is not found along with *P. pellucida* on the Scandinavian shores.

71. LOTTIA, *Gray.*

1. L. VIRGINEA, *Müll.*

Patella parva, Mont. Test. Brit. 480.

Under stones and on rocks, near low-water mark, frequent.

We are aware that we do some violence to an artificial arrangement by placing this species here, but it is so evidently one of the *Patellidæ*, that we should do much greater violence to the natural affinities by removing it to another order. We cannot, however, agree with Professor Lovén in considering it merely a section of the genus *Patella*.

FAMILY. CHITONIDÆ, *D'Orbigny.*

72. CHITON, *Linnæus.*

1. C. FASCICULARIS, *Linn.*

Chiton fascicularis, Mont. Test. Brit. 5.

Under stones near low-water mark, not uncommon.

2. C. HANLEYI, *Bean.*

Chiton Hanleyi, Bean in Thorpe's Brit. Mar. Conch. 263, f. 57.

Rare. Dredged in about 20 fathoms water at Cullercoats in 1837.—*J. A.* A specimen has also been got from the fishing boats at the same place.—*J. H. F.*

Mr. Bean's description was taken from young shells, and is in some respects imperfect. Our specimen is about half an inch long, and nearly black ; the granules are disposed in longitudinal beaded lines, which are small, and rather faint on the dorsal ridge, and become coarse and less regular at the sides. When alive, the spines of the marginal band are slightly fasciculated, a few of them standing erect near the junctions of the valves ; but these fall after the animal dies, and the margin then appears uniformly hispid.

3. C. MARGINATUS, *Penn.*

Chiton marginatus, Mont. Test. Brit. 1.

Common under stones between tide-marks, and very variable in colour and markings.

4. C. CINEREUS, *Linn.*

Chiton cinereus, Mont. Test. Brit. 3.

On stones and old shells from deepish water, frequent. Occasionally found on stones at low-water mark.—*A. H.*

The variety found on our coast is rather small, grey, and usually freckled ; but is seldom covered with the black incrustation so common on some of the large varieties of the Scottish coast.

5. C. RUBER, *Linn.*

Chiton ruber, Flem. Brit. Anim. 289.

Under stones near low-water mark, and at the roots of *Laminaria digitata,* frequent.

6. C. LÆVIS, "*Penn.*" *Mont.*

Chiton lævis, Mont. Test. Brit. 2.

Under stones at low-water mark, rare.

7. C. LÆVIGATUS, *Flem.*

Chiton lævigatus, Flem. Brit. Anim. 290.

Among the rocks below Dunstanborough Castle, very rare.—*Mr. R. Embleton.* A single living specimen was also got at Cullercoats.—*A. H.* The disunited valves are sometimes thrown on Whitley sands.—*J. H. F.*

Order. CIRRHOBRANCHIATA, *Blainville.*

Family. Dentaliadæ, *Gray.*

73. DENTALIUM, *Linn.*

1. D. entalis, *Linn.*

Dentalium entalis, Mont. Test. Brit. 494.

From deep water, not common.

Capt. Brown states that he met with a specimen of *Dentalium octangulatum* at Holy Island.—*Illust. Rec. Conch.* 117.

74. CÆCUM, *Fleming.*

1. C. trachea, *Mont.*

Dentalium trachea, Mont. Test. Brit. 497, t. 14, f. 10.

Rare. One specimen found in sand at Tynemouth.—*J. A.*

2. C. glabrum, *Mont.*

Dentalium glabrum, Mont. Test. Brit. 497.

In sand from Cheswick and Fern Islands, rare.—*J. A.*

Though aware of Mr. Clarke's interesting unpublished researches on the animal of this genus, we are unwilling to remove it from the vicinity of *Dentalium,* until its true place shall be more accurately made out. No genus has had more various places assigned to it; and, having no personal knowledge of the subject, we do not wish to be the first to give it another.

** Acephala.

Class. CONCHIFERA, *Lamarck.*

Order. PALLIOBRANCHIATA, *Blainville.*

Family. Terebratulidæ, *Gray.*

75. TEREBRATULA, *Müller.*

1. T. psittacea, *Gmelin.*

Terebratula psittacea, Turt. Brit. Biv. 236.

Hypothyris psittacea, King in Ann. Nat. Hist. xviii. 238.

One perfect and a broken specimen of this species have been

obtained from the deep-water fishing boats by Mr. King. They were found attached to the byssus of a *Modiola vulgaris* brought up from a depth of forty fathoms, twenty-five miles from the coast of Northumberland. As this is the third time that this species, a well-known inhabitant of the north seas, has been found between the Tyne and the Frith of Forth, there can be little doubt that it inhabits the deep water of our coast.

ORDER. LAMELLIBRANCHIATA, *Blainville.*

SUB-ORDER. MONOMYARIA, *Lamarck.*

FAMILY. OSTREIDÆ, *Guilding.*

76. ANOMIA, *Linnæus.*

1. A. EPHIPPIUM, *Linn.*

Anomia ephippium, Mont. Test. Brit. 155.

On most parts of the coast, but not common.

The *Anomia electrica* of Brown, found at Cullercoats, is most likely a variety of this species.

2. A. SQUAMULA, *Linn.*

Anomia squamula, Mont. Test. Brit. 156.

On oysters, pectens, and other shells, frequent.

3. A. PATELLIFORMIS, *Linn.*

Anomia undulata, Mont. Test. Brit. 157, t. 4, f. 6.

On the under sides of rocks and stones between tide-marks, frequent.

The *Ostrea striata* of British authors, first noticed by Lister as common upon the sands at the mouth of the Tees, we take to be this species, the upper valve of which is frequently thrown up on our shores, and has the inside green, with a white muscular impression as described by Lister. The under valve (which would have shewn it to be an *Anomia*) is very thin and fragile, and, in such cases, always absent.

4. A. ACULEATA, *Müll.*

Anomia aculeata, Mont. Test. Brit. 157, t. 4, f. 5.

On sea weeds between tide-marks, frequent.

5. A. CYLINDRICA, *Gmel.*

Anomia cymbiformis, Mont. Test. Brit. Supp. 64.

Anomia cylindrica, Turt. Brit. Biv. 232.

On the stems of sea-weeds, not uncommon.

77. OSTREA, *Linnæus.*

1. O. EDULIS, *Linn* (common oyster).

Ostrea edulis, Mont. Test. Brit. 151.

Not common. Frequently found on the shells of crabs. The only oyster-bed on the coast is at Holy Island.

The following remarks on this oyster-bed are from our friend Dr. Johnston's "Catalogue of the Bivalved Shells of Berwickshire and North Durham" :—

"In the inventory of the Priory of Holy Island for 1381-2, we find expended for 'a sloop *(navicula)*, bought of a certain Scotchman *(de quodam Skoto)*, with the oysters and other goods contained in it, 100*s*.' From the nature of the purchases, Mr. Raine thinks it may be inferred 'that there were at that period no oysters to be procured at home'; and suggests that the oysters of this very cargo were the founders of the present valuable colony.—(*Hist. N. Durham*, p. 110.) The conjecture is, I believe, unfounded; for not many years since, the oysters being exposed by the unusually great recess of a spring tide during the night to a severe frost, were all killed, and the bed had to be renewed from Preston Pans; and if my information is correct, a similar accident has occurred more than once during the last half century."—*Johns. in Berw. Club. Proc.* i. 80.

Family. PECTINIDÆ, *Broderip.*

78. PECTEN, *Müller.*

1. P. MAXIMUS, *Linn.*

Pecten maximus, Mont. Test. Brit. 143.

In deepish water, rather rare. Cullercoats. Hartlepool. Frequent in the north of Northumberland.—*Mr. R. Embleton.*

2. P. OPERCULARIS, *Linn.*

Pecten opercularis, Mont. Test. Brit. 145.

In shallowish water, frequent.

The depth at which this species lives appear to vary considerably, as we have a white variety presented to us by Mr. Richard

Howse, which was got in fifty fathoms off the coast of Northumberland; and Mr. King got the dead valves in abundance in fifty fathoms off the edge of the Dogger Bank. We are not aware of any large scallop beds near the coast.

3. P. STRIATUS, *Müll.*

Pecten Landsburgi, Smith in Wern. Mem. viii. 58.

Dredged in thirty fathoms water off the Northumberland coast. —*Mr. W. King.* Also obtained in fifty fathoms by Mr. R. Howse. Whitburn.—*Rev. G. C. Abbes.* Newton.—*Mr. R. Embleton.* We think Dr. Johnston's *Pecten spinosus* may be this species. Mr. King's specimen, which is nearly an inch long, is the largest we have seen.

4. P. TIGRINUS, *Müll.*

Pecten obsoletus, Mont. Test. Brit. 149.

In shallowish water, frequent. A small variety is the most common, and is often found in the stomachs of flat-fish. The larger kind is generally from deeper water. The varieties of colour and markings are almost endless.

5. P. SIMILIS, *Laskey.*

Pecten similis, Laskey in Wern. Mem. i. 387, t. 8, f. 8.

Pecten tumidus, Turt. Brit. Biv. 212, t. 17, f. 3.

Rare. Taken from the roots of corallines brought in by the Whitburn fishermen.—*A. H.* Several dead valves were dredged by Mr. R. Howse off Whitburn, and we have once or twice found it in the stomachs of flat-fish.

6. P. VARIUS, *Linn.*

Pecten varius, Mont. Test. Brit. 146.

On most parts of the coast, but not common.

7. P. DISTORTUS, *Da Costa.*

Pecten destortus, Mont. Test. Brit. 148.

Hinnites sinuosus, Desh. in Lam. Anim. s. Vert. 2nd. Ed. vii. 149.

In the cavities of stones and among the roots of sea-weeds at various depths, frequent.

In its adult state it is often found attached by the under valve, in the manner of an oyster, and when confined in cavities, becomes very irregular; under favourable circumstances, however, and generally in its young state, it is perfectly regular and un-

attached excepting by a bissus. In this state we take it to be the *Pecten spinosus* of Capt. Brown, which he says he "first found on the Herd Sands at South Shields.

A specimen of *Pecten septemradiatus*, Müll.,* was presented to the Newcastle Museum by the Rev. Josh. Law, who thinks he obtained it from the fishermen at Sunderland, and that it was probably got off our coast. It is similar to Swedish specimens sent to us by Professor Lovén, and we have also seen a similar variety from the west of Scotland. There is therefore no improbability of its occurring here, but the present instance is scarcely sufficient to warrant its admission.

79. LIMA, *Bruguière.*

1. L. LOSCOMBI, *Sow.*

Pecten fragilis, Mont. Test. Brit. Supp. 62.

From deep water, rare. Holy Island and Cullercoats.—*J. A.* Whitburn.—*Rev. G. C. Abbes.*

2. L. SUBAURICULATA, *Mont.*

Pecten subauriculata, Mont. Test. Brit. Supp. 63, t. 29, f. 2 ?

Var. ? *Lima sulculus*, Lovén Index Moll. Scand. 32.

A single valve was dredged by Mr. R. Howse off Whitburn, agreeing with a specimen of *L. sulculus* we have received from Professor Lovén. It is rather more slender, and has the ribs stronger than the usual form of *L. subauriculata*, Mont., but we are not sufficiently acquainted with the latter to decide concerning their specific distinction.

SUB-ORDER. DIMYARIA, *Lamarck.*

FAMILY. ARCIDÆ, *Gray.*

80. PECTUNCULUS, *Lamarck.*

1. P. PILOSUS, *Linn.*

Arca pilosa, Mont. Test. Brit. 136.

Embleton Bay, rare.—*Mr. R. Embleton.*

Mr. Embleton informs us that he got this from a number of *Artemis exoleta* and *Tellina crassa* brought from deep water by

* *Pecten nebulosus*, Brown, mentioned in our prefatory remarks as not unmmon in the west of Scotland, may be a variety of this.

the boats engaged in the brat fishing. It is in Mr. R. Maclaurin's list of Bivalved Shells, found in Coldingham Bay, where it is stated that dead shells are not rare. We are not aware of its having been got on other parts of the coast.

81. ARCA, *Linnæus.*

1. A. CARDISSA, *Lam.*

Arca fusca, Mont. Test. Brit. Supp. 51.

In cavities of stones and old shells from deep water. Frequent in the north of Northumberland.—*Mr. R. Embleton.* Cullercoats.—*J. H. F.* St. Mary's Island.—*A. H.*

82. LEDA, *Schumacher.*

1. L. CAUDATA, *Don.*

Arca minuta, Mont. Test. Brit. 140.

From deepish water, frequent. Several living individuals were dredged in seventeen fathoms off Whitburn, by Mr. R. Howse.

The *Arca minuta* of Fabricius appears to be distinct from this.

Capt. Brown mentions having found a single valve of "*Nucula rostrata*" at Holy Island. May it not have been a large variety of this, which has sometimes the posterior part much incurved in old shells?

83. NUCULA, *Lamarck.*

1. N. NUCLEUS, *Linn.*

Arca nucleus, Mont. Test. Brit. 141.

Not uncommon. Mr. R. Howse dredged it in great abundance off Whitburn, along with the last.

2. N. NITIDA, *Sow.*

Nucula nitida, Sow. Conch. Illust. f. 20; Thorpe Brit. Mar. Conch. 248, f. 31.

In deepish water, and thrown up in sand, rather rare. Cullercoats. A rayed variety has been got at Whitburn by the Rev. G. C. Abbes.

3. N. TENUIS, *Mont.*

Arca tenuis, Mont. Test. Brit. Supp. 56, t. 29, f. 1.

Frequent in the coralline zone. Not uncommon in the stomachs of haddocks.

Family. Mytilidæ, *Fleming.*

84. MYTILUS, *Linnæus.*

1. M. edulis, *Linn.* (common Mussel.)
   Mytilus edulis, Mont. Test. Brit. 159.
   Var. 1. Thin, with coloured rays.
   Mytilus pellucidus, Mont. Test. Brit. 160.
   Var. 2. Thick and incurved.
   Mytilus incurvatus, Mont. Test. Brit. 160.
   Var. 3. Thick, flattened and subangular.
   Mytilus subsaxatilis, Williamson in Mag. Nat. Hist.* vii. 354.
   Var. 4. Small, and sometimes rather hispid.

Within tide-marks, or a little beyond, on a hard or stony bottom, and among rocks, very common.

No species undergoes a greater degree of variation from locality than the common Mussel. For its full development a mixture of fresh with salt water appears to be necessary; it is, therefore, met with in the greatest perfection at the mouths of rivers. In such localities the typical form of the species is to be found, and, when left undisturbed, it usually forms large beds. On the more rocky and exposed parts of the coast it assumes a stunted appearance, running into the varieties of form mentioned above; always small on the exposed surface of rocks, but attaining a larger size in hollows and crevices, where it generally takes the form called *Mytilus incurvatus.* A more flattened variety is found at the roots of tangle.

Mussels are much used for bait in this neighbourhood. The Cullercoats fishermen make an annual excursion to the mouth of the Tees for the purpose of collecting them, the beds at the

* "I first noticed this variety in 1810, in company with my late valued friend Mr. Hancock, of Newcastle, at the mouth of the Tyne, below Tynemouth, adhering to stones left dry by the tide, in small groups."—*Captain Brown.* (Illust. Rec. Conch. 77.)

Lowlights being found insufficient for their supply. The Mussels got on these occasions are kept alive in pools among the rocks, built round with loose stones.

85. MODIOLA, *Lamarck.*

* Smooth.

1. M. VULGARIS, *Flem.*

Mytilus modiolus, Mont. Test. Brit. 163.

Var. *Mytilus barbatus,* Mont. Test. Brit. 161.

From deep water, common. The variety is frequently found on rocky ground, near low-water mark.

It is remarkable that the large form of *M. vulgaris* is always found with us in deep water, never approaching the shore, and even rare in a depth of 20 or 30 fathoms, while on the western coasts it is found frequently in shallow water, and even close to low-water mark.

** Ribbed at each end (*Lanistina,* Gray).

2. M. NIGRA, *Gray.*

Mytilus descrepans, large var., Mont. Test. Brit. Supp. 65, t. 26, f. 4.

Modiola nigra, Thorpe Brit. Mar. Conch. 249, f. 58.

From deep water, rare. Cullercoats.—*J. A.* Whitburn.—*Rev. G. C. Abbes.* Mr. Howse dredged it alive in 17 fathoms. Mr. King has also got it from the fishing boats.

The animal of this species is transparent white, with the margin of the cloak and siphon speckled with brown and opake white.

3. M. DESCREPANS, *Mont.*

Mytilus descrepans, Mont. Test. Brit. 169.

At the roots of sea-weeds between tide-marks, common. Also in corallines from deeper water, where it attains a much larger size.

The animal is white, and, assisted by its long strap-shaped foot, can move about pretty quickly; but it generally prefers a stationary life, and forms for itself a kind of nest or case by stitching together the small sea-weeds or corallines with its byssal threads; here it remains attached by its byssus awaiting the food that may come within its reach.

When viewed in a living state there appear to be two siphons at the longer end of the shell, but only the posterior of these has the walls complete; the other has its anterior side open, formed by a fold in the cloak as in the siphons of the zoophagous gasteropods. The animal has consequently only two pallial apertures.

4. M. MARMARATA, *Forbes.*

Mytilus descors, Mont. Test. Brit. 167.

Imbedded in the skin of *Ascidia tuberosa* and *A. sordida,* (especially the former) from deepish water, common.

86. CRENELLA, *Brown.*

1. C. DISCUSSATA, *Mont.*

Mytilus decussatus, Mont. Test. Brit. Supp. 69.

Crenella elliptica, Brown's Illust. Rec. Conch. 75, t. 23, f. 12-14.

In shell-sand at Tynemouth, and the Fern Islands, rare. A specimen was got by Mr. King in a cavity of a small stone from deep water, brought in by the fishermen. Dredged alive in seventeen fathoms off Whitburn, by Mr. R. Howse.

This genus undoubtedly comes very near to the costated division of the last; the crenulated hinge plate, and the deep-seated internal ligament appear to be the chief distinguishing characteristics.

FAMILY. UNIONIDÆ, *Fleming.*

87. ANODON, *Cuvier.*

1. A. ANATINUS, *Linn.*

Anodon cygneus, var. 8, *anatinus,* Gray, Turt. Man. 292.

In ponds, frequent.

Captain Brown figures a specimen from Prestwick Car, which is about six inches in breadth. It has not occurred to us of so large a size.

88. UNIO, *Retzius.*

1. U. PICTORUM, *Linn.*

Unio pictorum, Gray, Turt. Man. 295, t. 2, f. 11.

Mr. Hogg states that this has been found in the ponds at Wynyard, on the authority of Sir W. C. Trevelyan, Bart. It has not been met with further north.

2. U. MARGARITIFERA, *Linn.*

Alasmodon margaritiferus, Gray, Turt. Man. 293, t. 2, f. 9.

In mountain streams, and rivers in the early and more precipitous part of their course. Very fine in the Reed above Otterburn.

FAMILY. CARDIADÆ, *Fleming.*

89. CARDIUM, *Linnæus.*

1. C. ECHINATUM, *Linn.*

Cardium echinatum, Mont. Test. Brit. 78.

In deep water, frequent.

The *Cardium aculeatum* of Sir C. Sharp's list is probably a variety of this.

2. C. EDULE, *Linn.* (common cockle.)

Cardium edule, Mont. Test. Brit. 76.

On some of our sandy shores, abundant. The cockles of Budle Bay are celebrated for their large size.

3. C. FASCIATUM, *Mont.*

Cardium fasciatum, Mont. Test. Brit. Supp. 30 ; Lovén, Ind. Moll. Scand. 35.

Cardium exiguum, Hogg, Nat. Hist. Stock. 28 ?

In fifteen or twenty fathoms, and perhaps also in shallow water, not uncommon.

Our shell agrees perfectly with Montagu's description, with the addition of spines on the posterior margin, which are very liable to be worn off. Montagu's figure appears to have been taken from the young of *C. edule ;* hence the difficulty there has been in ascertaining the species. The *C. elongatum* of Turton's " Bivalves" is a variety of this.

4. C. NODOSUM, *Mont.*

Cardium nodosum, Mont. Test. Brit. 81.

At the roots of corallines from the fishing boats, Whitburn, rare.—*Mr. R. Howse.*

5. C. NORVEGICUM, *Spengler.*

Cardium lævigatum, Mont. Test. Brit. 80.

In deep water, not rare.

Cardium medium was introduced as a British species by

Donovan, who figures it from a specimen "found near Hartlepool, on the coast of Durham." The shell had most likely got there by some accident, as the species is not known to inhabit our coast, and is scarcely British.

Family. Veneridæ, *Fleming.*

90. ARTEMIS, *Poli.*

1. A. EXOLETA, *Linn.*

Venus exoleta, Mont. Test. Brit. 116.

From deep water, frequent; more especially towards the north of Northumberland.

2. A. LINCTA, *Pult.*

Cytherea lincta, Flem. Brit. Anim. 445.

Var. *Artemis comta,* Lovén Index Moll. Scand. 39.

At different depths, on most parts of the coast, not uncommon.

A specimen of his *Artemis comta,* sent to us by Professor Lovén, enables us to state that it is similar to what we consider a variety of *Artemis lincta,* found on our coast.

3. A. UNDATA.

Venus undata, Mont. Test. Brit. 117.

From deepish water, not common.

We place this species provisionally here, though scarcely a true *Artemis,* as there is some difficulty in assigning it a generic appellation. The name of *Mysia,* given to it by Dr. Leach, has been appropriated by Capt. Brown to a different shell, *Tellina rotundata,* Mont. (Conchologists' Text Book, 150), and is consequently synonymous with *Diplodonta,* Bronn.

91. VENUS, *Linnæus.*

1. V. VERRUCOSA, *Linn.*

Venus verrucosa, Mont. Test. Brit. 112.

Seaton Carew, single valves.—*Miss Elizabeth Backhouse.* It is also in Sir C. Sharp's Hartlepool list, and Capt. Brown says that it is found on the Northumberland coast. We have never been so fortunate as to meet with it, and suspect it may have been derived from ballast.

2. V. CASINA, *Linn.*

Venus casina, Mont. Test. Brit. Supp. 47.

From deep water, rather rare. "Holy Island."—*Mr. Winch.* Newton.—*Mr. R. Embleton.* Whitburn.—*Rev. G. C. Abbes.* "Seaton, W. C. Trevelyan, Esq."—*Hogg's Nat. Hist. of Stockton.*

3. V. FASCIATA, *Da Costa.*

Venus paphia, Mont. Test. Brit. 110.

In deep water, rather rare.

4. V. GALLINA, *Linn.*

Venus striatula, Mont. Test. Brit. 113.

Var. 1. Without rays, ridges sharper and closer.

Venus rugosa, Penn. Brit. Zool. iv. 95, t. 56, f. 50.

Var. 2. Shell more compressed, and produced transversely; striæ sharp and distant.

Venus Prideauxiana, Leach, Macg. Moll. Aberd. 266.

This species is subject to very great varieties. The normal form, *Venus gallina* of authors, is plentiful on some of our sandy shores, living at a little distance below low-water mark. The first variety, *Venus rugosa* of Pennant, and perhaps also *V. laminosa* of Laskey and Montagu, is very rare on our coast and its habitat unknown to us. The second variety, *V. Prideauxiana* Leach, is always found in deep water, and is not uncommon; sometimes plain, but generally with about three brown rays. The plain kind appears to be the *V. laminosa* of Turton's "British Bivalves," and his *V. pallida* looks like a variety of the littoral form with the ridges obsolete. The *V. costata* of Brown (Illust. Rec. Conch. 90, t. 36, f. 13), "found at Seaton, Northumberland," we take to be a short variety of the deep-water form.

5. V. OVATA, *Penn.*

Venus ovata, Mont. Test. Brit. 120.

From deep water, rather rare.

Venus triangularis of Mr. Hogg's list is more likely *Astarte compressa.* There is also a *Venus triangulus*, Brown, MSS., in the same list, with which we are unacquainted. Mr. W. Backhouse has suggested to us that the *Venus chione* of Sir C. Sharp's "History of Hartlepool," may be a variety of *Cyprina Islandica*,

which we think probable. The range of *Cytherea Chione* in Britain does not extend much beyond the Cornish coast.

92. PULLASTRA, *Sowerby.*

1. P. AUREA, *Gmel.*

Venus aurea, Mont. Test. Brit. 129.

From the fishing boats, Cullercoats, rare.—*J. H. F.* Whitburn.—*Rev. G. C. Abbes.*

2. P. VIRGINEA, *Linn.*

Venus virginea, Mont. Test. Brit. 128.

On most parts of the coast, but not common.

3. P. DECUSSATA, *Linn.*

Venus decussata, Mont. Test. Brit. 124.

In shallowish water, not common. Low Lights. South Shields sands.—*A. H.* Alnmouth Bay, rare.—*Mr. Embleton.* Holy Island, and Hartlepool.

4. P. VULGARIS, *Sow.*

Venus pullastra, Mont. Test. Brit. 125.

On sandy shores mixed with stones, not uncommon.

5. P. PERFORANS, *Mont.*

Venus perforans, Mont. Test. Brit. 127.

In the shale rocks of our coast, common.

This species does not appear to excavate its own habitation, but merely to occupy the holes bored by the *Pholades.* It is also often found in crevices of the rocks.

FAMILY. CYPRINIDÆ, *Forbes.*

93. CYPRINA, *Lamarck.*

1. C. ISLANDICA, *Linn.*

Venus Islandica, Mont. Test. Brit. 114.

In deep water, common.

94. ASTARTE, *Sowerby.*

1. A. DANMONIÆ, *Mont.*

Venus Danmonia, Mont. Test. Brit. Supp. 45, t. 29, f. 4.

In deep water, not uncommon. Mr. R. Howse dredged it in

great abundance in sixty fathoms, about fifty miles from the shore.

2. A. SCOTICA, *Maton and Rackett.*

Venus Scotica, Mont. Test. Brit. Supp. 44.

In deep water, rather rare. Cullercoats.—*J. A.* Mr. Howse dredged a few of this species along with the last. Mr. King mentions having got a specimen "with the basal margins plain, but whose posterior and anterior margins are crenulated."

3. A. ELLIPTICA, *Brown.*

Crassina elliptica (and ovata), Brown Illust. Rec. Conch. 96, t. 38, f. 3, 12, 13.

From deep water, rare. Mr. King procured specimens of this shell from the fishing boats, which he considered to be sub-fossil, and concludes that it is not living on our coast at the present day. The Rev. G. C. Abbes, however, has met with it evidently in a recent state.

4. A. COMPRESSA, *Mont.*

Venus compressa, Mont. Test. Brit. Supp. 43, t. 26, f. 1 (exc. large var.).

Astarte striata, Lovén Index Moll. Scand. 37.

From about twenty fathoms water, frequent. Mr. Howse dredged it alive in seventeen fathoms.

5. A. TRIANGULARIS, *Mont.*

Mactra triangularis, Mont. Test. Brit. 99, t. 3, f. 5.

Goodallia triangularis, Turt. Brit. Biv. 77, t. 6, f. 14.

In shell-sand, rare. Fern Islands.

We cannot find any good character to distinguish the genus *Goodallia* of Turton from *Astarte*. Dr. Turton says the ligament is internal, but in this he is certainly mistaken.

FAMILY. TELLINIDÆ, *D'Orbigny.*

95. DONAX, *Linnæus.*

1. D. ANATINA, *Lam.*

Donax trunculus, Mont. Test. Brit. 103.

On most of our sands, not uncommon.

We have received specimens of this shell from Mr. Damon, of Weymouth, dredged up alive by his brother in eighteen fathoms

water, ten miles from the coast, off Shields. This is a curious locality for a species usually found living in the sand close to low-water mark. The specimens are more brightly coloured, and rather smoother than usual.

96. TELLINA, *Linnæus.*

1. T. TENUIS, *Da Costa.*

Tellina tenuis, Mont. Test. Brit. 59.

On many of our sandy shores, common. Newbiggin, Holy Island, Hartlepool, and Seaton.

2. T. FABULA, *Gmelin.*

Tellina fabula, Mont. Test. Brit. 61.

Not uncommon on all our sands.

It is not so local as the last, but less plentiful in particular spots. Like most of the other bivalves, it has now become rare on Tynemouth and Whitley sands.

3. T. DONACINA, *Linn.*

Tellina donacina, Mont. Test. Brit. 58.

On sandy shores, rare. Warkworth sands (a single specimen). —*Mr. R. Embleton.* Hartlepool.—*Mr. Septimus Peacock.*

4. T. PYGMÆA, *Lovén.*

Shell ovate oblong, very finely striated, much produced anteriorly; and very short, subtruncated, and obtusely angulated posteriorly, without perceptible flexure; colour reddish, yellow, or white, with sometimes a few interrupted rose-coloured rays. Length rather more than two-tenths of an inch; breadth, four-tenths.

Tellina pygmæa, Lovén, Ind. Moll. Scand. 42.

We found a few specimens of this species on the sands at Holy Island in 1837, but from its great similarity to *T. donacina,* we had not ventured to characterise it as distinct from the young of that shell, until Dr. Lovén's description drew our attention to it, and a more careful examination of its characters has convinced us that it is distinct. The shell is a little more produced in front, and shorter and more truncated at the posterior end than in *T. donacina*; the umbones are consequently more lateral, which becomes very obvious when the shell is laid open. The

anterior lateral tooth is also more remote, and the sinus of the pallial impression proportionately smaller than in *T. donacina*, as pointed out by Dr. Lovén. A specimen sent us by that distinguished naturalist enables us to speak with confidence as to the identity of the species.

5. T. SOLIDULA, *Pult.*

Tellina solidula, Mont. Test. Brit. 63.

Not uncommon on many of our sandy shores.

6. T. CRASSA, *Penn.*

Tellina crassa, Mont. Test. Brit. 65.

At Holy Island and some other parts of the north of Northumberland, not uncommon. Embleton Bay, plentiful.—*Mr. Embleton.* Cullercoats, rare. We take the *Arcopagia ovata* of Brown (found at Newbiggin) to be a variety of the young of this species, which is much more ovate in its early stages.

Tellina punicea. "We met with dead shells with the valves united, by dredging off Holy Island."—*Capt. Brown, Ill. Rec. Conch.* 100.

Tellina pellucida, Brown Illust. Rec. Conch. 101, t. 40, f. 22, "found at Seaton, county of Durham," by Sir W. C. Trevelyan, we are unacquainted with, but, judging from the description and figure, it does not appear to belong to this genus.

Tellina squalida of Sir C. Sharp's list we have reason to believe is only a large variety of *T. tenuis.*

Tellina carnaria has probably been introduced into Mr. Winch's list by some mistake. It is not a British species.

97. PSAMMOBIA, *Lamarck.*

1. P. FEROENSIS, *Gmel.*

Tellina Feroensis, Mont. Test. Brit. 55.

From deep water, frequent.

2. P. VESPERTINA, *Gmel.*

Solen vespertinus, Mont. Test. Brit. 54.

From the fishing boats, Cullercoats, rare.—*J. H. F.*, and *Mr. Chas. M. Adamson.* Whitburn.—*Rev. G. C. Abbes.*

3. P. TELLINELLA, *Lam.*

Psammobia florida, Turt. Brit. Biv. 86, t. 6, f. 9.

From deepish water, rather rare. Cullercoats. Newbiggin. Fern Islands.—*A. H.* Seaton Carew.—*Mr. W. Backhouse.*

98. SYNDOSMYA, *Recluz.*

1. S. ALBA, *Wood.*

Mactra Boysii, Mont. Test. Brit. 98, t. 3, f. 7.

On sandy shores, not uncommon. Plentiful at Whitburn.

2. S. PRISMATICA, *Mont.*

Ligula prismatica, Mont. Test. Brit. Supp. 23, t. 26, f. 3.

In deepish water, frequent. Often found in the stomachs of haddocks.

3. S. TENUIS, *Mont.*

Mactra tenuis, Mont. Test. Brit. 572, t. 17, f. 7.

Rare, "Seaton. Mr. J. Backhouse."—*Hogg Nat. Hist. Stock.* From the stomach of a duck shot at Holy Island.—*Mr. Chas. M. Adamson.*

FAMILY. MACTRIDÆ, *Fleming.*

99. SCROBICULARIA, *Schumacher.*

1. S. PLANA, *Da Costa.*

Mactra compressa, Mont. Test. Brit. 96.

Within tide-marks, or a little beyond, on a muddy bottom, generally at the mouths of rivers, not rare. Jarrow Slake, &c.

100. MACTRA, *Linnæus.*

1. M. SOLIDA, *Linn.*

Mactra solida, Mont. Test. Brit. 92.

Var. *Mactra truncata,* Mont. Test. Brit. Supp. 34.

On sandy shores, not common. The truncated variety, *M. truncata,* Mont., is frequent in the north of Northumberland.

2. M. ELLIPTICA, *Brown.*

Mactra elliptica, Brown Illust. Rec. Conch. 108, t. 41, f. 6.

From deepish water, not uncommon.

3. M. SUBTRUNCATA, *Da Costa.*

Mactra subtruncata, Mont. Test. Brit. 93.

On sandy beaches, frequent. Two varieties occur. The more usual kind is thick, solid, and strongly wrinkled, but there is a

thinner variety from deeper water, which is smoother and more produced at the posterior end. The latter is rather rare.

4. M. STULTORUM, *Linn.*

Mactra stultorum, Mont. Test. Brit. 94.

Var. *Mactra cinerea*, Mont. Test. Brit. Supp. 35.

Common on most of our shores, living just beyond low-water mark. The plain variety (*M. cinerea*, Mont.) is rather rare.

FAMILY. LUCINIDÆ, *D'Orbigny.*

101. LUCINA, *Bruguière.*

1. L. BOREALIS, *Linn.*

Tellina radula, Mont. Test. Brit. 68, t. 2, f. 1, 2.

Embleton Bay, near low-water mark, plentiful.—*Mr. R. Embleton.* Not common on other parts of the coast. Whitburn.—*Rev. G. C. Abbes.* Cullercoats.—*J. A.*

L. spinifera, Mont., is stated in Mr. Hogg's Natural History of Stockton to have been found at Seaton by Sir W. C. Trevelyan, Bart.

L. lactea, Mont., has been got at the same place by Mr. Hogg.

L. rotundata, Mont., also got at Seaton by Sir W. C. Trevelyan, and a single valve has occurred to the Rev. G. C. Abbes at Whitburn; but we suspect that this and the last, which are south country species, have been derived from ballast.

102. CRYPTODON, *Turton.*

1. C. FLEXUOSUS, *Mont.*

Tellina flexuosa, Mont. Test. Brit. 72.

Axinus flexuosus, King in Ann. Nat. Hist. xviii. 242.

Rare. Two or three specimens have been found at different times at Whitburn by the Rev. G. C. Abbes, where it has also been got by Mr. Howse, who afterwards dredged it in seventeen fathoms off that place. Mr. King has met with one specimen from the fishing-boats, which he states "came up on the lines after they had been down in thirty fathoms water, twenty-five miles east of the Fern Islands."

FAMILY. CYCLADIDÆ, *Fleming.*

103. CYCLAS, *Bruguière.*

1. C. CORNEA, *Linn.*

Cyclas cornea, Gray, Turt. Man. 280, t. 1, f. 2.

In ditches and ponds, common.

2. C. CALYCULATA, *Drap.*

Cyclas lacustris, Gray, Turt. Man. 281, t. 1, f. 3.

Cyclas calyculata and *lacustris*, Ald. in Newc. Nat. Hist. Trans. i. 40, 41.

In ponds, not common. Carr's Hill, Newcastle Town Moor, Tynemouth, &c. This may possibly be the *Tellina lacustris* of Müller, but as continental authors consider it distinct, we have adopted Draparnaud's name.

104. PISIDIUM, *Pfeifer.*

1. P. OBTUSALE, *Pfeiffer.*

Pisidium obtusale, Gray, Turt. Man. 282, t. 12, f. 149.

In a pond near Darlington.—*Mr. W. Backhouse.*

2. P. PUSILLUM, *Turt.*

Pisidium pusillum, Gray, Turt. Man. 283, t. 1, f. 7.

In ditches and ponds, frequent.

3. P. NITIDUM, *Jenyns.*

Pisidium nitidum, Gray, Turt. Man. 283, t. 12, f. 150.

In ponds at Prestwick Car.—*A. H.* Near Darlington.—*Mr. W. Backhouse.*

4. P. PULCHELLUM, *Jenyns.*

Pisidium pulchellum, Gray, Turt. Man. 284, t. 12, f. 152.

In ponds and ditches, not uncommon. Var. β Jen. is found in ponds on Ryton Haughs.

5. P. CINEREUM, *Alder.*

Pisidium cinereum, Ald. in Newc. Nat. Hist. Trans. ii., 341 ; Gray, Turt. Man. 286, t. 12, f. 152.

Plentiful in a pond at the bottom of Castle Eden Dean. A more ventricose variety is found in ditches near Brandling Place, Newcastle.

6. P. AMNICUM, *Müll.*

Pisidium amnicum, Gray, Turt. Man. 285, t. 1, f. 5.

In slow streams, rather rare. Mill Race, Jesmond Dean. Near Stockton.—*Mr. Hogg.*

Family. Kelliadæ, *Forbes.*

105. LEPTON, *Turton.*

1. L. convexum, *n. s.*

Shell rather convex, transversely ovate, white; covered with minute transversely oblong punctures; hinge with the central tooth rather large, and the lateral laminæ small.

A single valve of a minute shell with these characters has occurred to us at Cullercoats. It is evidently a *Lepton*, and differs from *L. squamosum* in being rather more convex, in having the punctures of the surface oblong instead of circular, and in the greater proportional size of the tooth. These seem to indicate a specific distinction, but as the specimen is scarcely a line in diameter, and probably young, we cannot speak very confidently. The nucleus on the umbo is, however, so much smaller than that of *L. squamosum*, that we conclude it never attains the same size.

106. KELLIA, *Turton.*

1. K. suborbicularis, *Mont.*

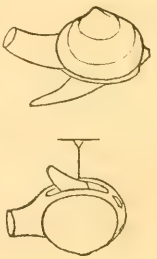
Mya suborbicularis, Mont. Test. Brit. 39, t. 26, f. 6.

At the roots of *Laminaria digitata*, and other sea-weeds, under stones, and in the cavities of stones and old shells; not rare.

This species is subject to great variety of size and form; so much so, that we have thought more than one species might be confounded under the name, but we have failed to obtain any distinguishing character that can be depended upon as permanent. Two varieties may be mentioned; the one thin, transparent, and with a delicate play of iridescent colours on the surface. This is generally found at the roots of tangle. The other, which is more common among rocks between tide-marks, is smaller, more orbicular, more strongly striated, and covered with an ochreous crust near the umbones. Intermediate forms occur.

The animal of *Kellia* is very remarkable, and constitutes a new

form among the *Conchifera*. All the bivalves hitherto known have the siphons, when there are any, at the posterior end of the shell : the peculiarity of this genus is—that it has a large siphonal tube in front, as well as a short one behind. The animal of *Kellia suborbicularis* is white and semi-transparent ; the mantle has three openings ;—the first is in front, and is produced into the siphonal tube above mentioned, which is very broad, and can be extended to a length equalling the diameter of the shell. This tube is not divided inside, and the margin of its aperture is plain. The second opening, which is at the base of the shell, is the largest of the three, and gives egress to a longish strap-shaped foot. The third opening is posterior, and forms a very short siphon, seldom protruded beyond the shell. The margins of these apertures are smooth, but there is a very delicate fringe of small and distant filaments, close within the margin of the shell, which can only be seen when the animal is fully extended. With a good magnifier, a current of water may be observed to pass in at the anterior siphon, and to be expelled at intervals by the posterior one. The animal moves about freely by means of its strap-shaped foot, which is frequently protruded in all directions. Its progress is usually forwards, but, sometimes, it crawls backwards or sidewise, especially when it is ascending a perpendicular surface, which it frequently does for the purpose of suspending itself by its byssus. The byssal aperture is about halfway up the foot on the posterior surface, from which the animal produces a very delicate thread, and suspends itself freely by a single, almost inconspicuous, fibre, strengthened by a double attachment at the top. The accompanying figures represent the animal (a little magnified) in a state of activity, and also suspended by its byssus in a state of rest.



2. K. RUBRA, *Mont.*

Cardium rubrum, Mont. Test. Brit. 83, t. 27, f. 4.

Among small sea-weeds near low-water mark, Whitley.—*J. H. F.* At the roots of *Lichina pygmæa*, on the rocks below Bamborough Castle.—*Mr. W. Thompson, of Belfast.*

The animal of this species has the same large anterior siphonal tube as the last; the foot, too, is long and strap-shaped, but a little more robust than that of *K. suborbicularis*.

M. Récluz has separated this species from *Kellia*, and has formed of it, and some other small shells, the genus *Peronia*. We have carefully read over M. Récluz's very elaborate description, with our British specimens before us, and cannot perceive any difference between this and the last species that can be considered more than specific. The ligament, upon which M. Récluz founds a part of his distinction, appears to us to occupy the same situation in each, with the exception that it is longer and more deeply seated in *K. rubra* than in *K. suborbicularis*. The teeth, too, are pretty nearly alike in number and position, though a little different in form. Taking, therefore, into consideration the similarity of the animals, we see no good reason for dividing them. The characters of the animal of *Peronia* given by M. Récluz are indeed very different from ours, but he does not appear to have met with it in a living state, and has consequently taken them from the *Peron* of Adanson, which from its external ligament and two posterior tubes, appear to be a distinct genus.

107. TURTONIA, *Hanley*.

1. T. MINUTA, *Fab.*

Venus minuta, Fab. Fau. Grœnl. 412.

Mya purpurea, Mont. Test. Brit. Supp. 21.

On small sea-weeds, in pools within tide-marks, common.

The animal of this species differs very considerably from that of Kellia. The mantle is widely open anteriorly, giving passage to a strong foot, broad towards the body, and angulate at the posterior base. There is only a single siphon, which is very small and slender, and is placed at the posterior or elongated end of the shell.

108. MONTACUTA, *Turton*.

1. M. BIDENTATA, *Mont.*

Mya bidentata, Mont. Test. Brit. 44, t. 26, f. 5.

From the fishing boats, and in sand, not uncommon.

The foot is large, subtriangular, and strongly kneed or angulated behind. It is protruded from the longer end of the shell, which in this genus is anterior. We have not been able to detect any siphons. Professor Lovén was the first to notice that this species, which is the *Mesodesma exiguum* of his "Index," has an ossicle. By carefully opening some of our specimens we have also observed it. It appears to be a calcification of the lower part of the ligament, which is very easily detached, and is generally wanting in dead shells. We have not found the same process in the following species.

2. M. SUBSTRIATA, *Mont.*

Ligula substriata, Mont. Test. Brit. Supp. 25.

Taken abundantly by Mr. R. Howse, on the spines of *Spatangus purpureus*, from 60 fathoms water, 50 miles off the coast of Durham.

Mr. Howse's observations on the animal of this species agree with ours on *M. bidentata*, as to the shape and position of the foot, and the apparent absence of siphons. All the animals of this family appear to attach themselves by a byssus.

3. M. FERRUGINOSA, *Mont.*

Mya ferruginosa, Mont. Test. Brit. Supp. 22, t. 26, f. 2.

Under stones among the rocks at Cullercoats, and in sand, rare.

FAMILY. ANATINIDÆ, *Gray.*

109. NEÆRA, *Gray.*

1. N. CUSPIDATA, *Olivi.*

Thracia brevirostra, Brown Illust. Rec. Conch. 110, t. 44, f. 11—14.

First noticed on this coast by the Rev. W. Mark, who got two individuals from the stomachs of haddocks. From a fishing boat, Cullercoats (one specimen).—*A. H.* Mr. R. Howse has got one or two specimens from haddocks at Whitburn.

110. CORBULA, *Bruguière.*

1. C. GIBBA, *Olivi.*

Mya inæquivalvis, Mont. Test. Brit. 38.

Corbula nucleus, Lam. Anim. s. Vert, 2nd Ed., vi. 139.

From deepish water, not rare. Dredged in seventeen fathoms by Mr. R. Howse.

111. THRACIA, *Leach.*

1. T. CONVEXA, *Wood.*

Anatina convexa, Turt. Brit. Biv. 44, t. 4, f. 1, 2.

From the fishing boats, Cullercoats, rare.—*A. H.* Whitburn. —*Rev. G. C. Abbes.* Only single valves have occurred.

2. T. PHASEOLINA, *Lam.*

Mya pubescens, small variety, Mont. Test. Brit. 40.

Thracia phaseolina, Kiener. 7, t. 2, f. 4.

On sandy beaches, not uncommon.

3. T. VILLOSIUSCULA, *Macg.*

Anatina villosiuscula, Macg. in Edinb. New Ph. Journ. ii. 370, t. 1, f. 10, 11.

Thracia ovata, Brown, Illust. Rec. Conch. 110, t. 44, f. 4.

From deeper water than the last, rather rare.

This is rather a doubtful species, but we think may prove distinct. It is shorter posteriorly than the last, and has the lower angle of the pallial sinus much more obtuse. The ligamental plate of the hinge is also a little less produced. The *Thracia ovata* of Capt. Brown, founded on a specimen got on Cullercoats sands, we take to be synonymous with *A. villosiuscula*, Macg., though Capt. B. refers the latter to his *T. pubescens* (our *T. phaseolina*).

112. ANATINA, *Lamarck.*

1. A. PRÆTENUIS, *Petiver.*

Mya prætenuis, Mont. Test. Brit. 41, t. 1, f. 2.

On sandy beaches, rare. Newbiggin.—*J. A.* South Shields sand.—*A. H.*

2. A. DISTORTA, *Mont.*

Mya distorta, Mont. Test. Brit. 42, t. 1, f. 1.

Cullercoats, rare. In a piece of limestone from deep water.—*J. H. F.*

113. LYONSIA, *Turton.*

1. L. NORVEGICA, *Chemn.*

Lyonsia striata, Turt. Brit. Biv. 35, t. 3, f. 6, 7.

From the fishing boats, Cullercoats, rare. Seaton Carew.—*Miss E. Backhouse.* Whitburn.—*Rev. G. C. Abbes,* and *Mr. R. Howse.*

FAMILY. MYADÆ, *Fleming.*

114. LUTRARIA, *Lamarck.*

1. L. ELLIPTICA, *Lam.*

Mactra lutraria, Mont. Test. Brit. 99.

On sandy beaches near and below low-water mark, rather local, but abundant in some places. Blyth sands. Embleton.—*Mr. R. Embleton.* Hartlepool and Seaton. "Ad ostium fluminis *Tees* copiosissimè reperiunter."—*Lister Anim. Angl.* 171, *Anno* 1678.

A thick and rather more elongated variety is found on this coast, which has been sometimes taken for *L. oblonga.* It is figured by Capt. Brown (Illust. Rec. Conch. t. 43, f. 3), from a specimen in the cabinet at Wallington.

115. MYA, *Linnæus.*

1. M. TRUNCATA, *Linn.*

Mya truncata, Mont. Test. Brit. 32.

Within tide marks on a stony bottom mixed with sand and mud, where it lives buried just deep enough to reach the surface with its long tube when the tide is up : mostly at the mouths of rivers. Low Lights, where it was first observed by the Rev. W. Mark. It was noticed by Lister at the mouth of the Tees. It occurs also in deeper water, and Mr. King dredged dead shells in 50 fathoms, not far from the edge of the Dogger-bank, and about sixty miles east of Sunderland.

Mya Uddevallensis, Forbes. Two or three dead valves of this species have been got from the deep-water fishing boats. Mr. King supposes them to be fossil, and that the shell-bank from which they were obtained may be a Pleistocene stratum, existing

beneath the sea. We see no good reason for this conclusion, as the shells got from it are all varieties of existing species. That *Mya Uddevallensis* has not been brought up alive on the fishermen's lines, may be accounted for from its habit of living buried in the sand. The specimens obtained appear to have been attached to the byssus of *Modiola vulgaris*, a not unusual mode of getting shells from deep water, but such are generally in a bad state.

2. M. ARENARIA, *Linn.*

Mya arenaria, Mont. Test. Brit. 30.

On stony ground within tide marks, with the last. Low Lights. "Hartlepool."—*Sir C. Sharp.* "Holy Island."—*Mr. Winch.*

116. PANOPÆA, *Lamarck.*

1. P. NORVEGICA, *Spengler.*

Panopæa glycimeris, Bean in Mag. Nat. Hist. viii. 563, f. 51.

Panopæa arctica, King in Ann. Nat. Hist. xviii., 243.

Two or three specimens of this rare species have been obtained from the deep-water fishermen by Mr. W. King, and Mr. R. Howse.

FAMILY. SOLENIDÆ, *Fleming.*

117. SOLEN, *Linnæus.*

1. S. SILIQUA, *Linn.*

Solen siliqua, Mont. Test. Brit. 46.

Common on some of our sandy beaches, where it lives in the sand near low-water mark. It is plentiful at Newbiggin and in the north of Northumberland, as well as at Hartlepool and Seaton; but it is not found on Cullercoats or Whitley sands, and rarely in the north of Durham. Capt. Brown found a specimen at Holy Island measuring twelve inches.

2. S. ENSIS, *Linn.*

Solen ensis, Mont. Test. Brit. 48.

On sandy shores, frequent; generally in the same places as the last.

3. S. PELLUCIDUS, *Penn.*

Solen pellucidus, Mont. Test. Brit. 49.

Cullercoats, rare. South Shields sands.—*A. H.* Dredged in 60 fathoms off the Durham coast by Mr. R. Howse, who has also got it at Whitburn. "Hartlepool."—*Sir C. Sharp.*

Solen legumen is in Sir C. Sharp's list of Hartlepool shells, and Mr. Winch's for Lindisfarne. We have not heard of its being recently met with.

Family. Gastrochænidæ, *Forbes.*

118. SAXICAVA, *Lamarck.*

1. S. rugosa, *Penn.*

Mytilus rugosus, Mont. Test. Brit. 164.

Solen minutus, Mont. Test. Brit. 53, t. 1, f. 4.

In limestone rocks, frequent. We have never found it boring into any other description of rock in this neighbourhood. It is often met with, attached by the byssus, at the roots of tangle (*Laminaria digitata*), and other large sea-weeds; as well as among zoophytes and old shells from deeper water. The varieties of form and size are very numerous, but we have not been able to make out more than one species.

Family. Pholadidæ, *Gray.*

119. PHOLAS, *Linnæus.*

1. P. crispata, *Linn.*

Pholas crispatus, Mont. Test. Brit. 23.

In shale rocks, and occasionally in limestone, and the softer sandstones, on different parts of the coast, common. Mr. Hogg informs us that he found this and the following species living in decayed wood, below the sand, at Seaton.

2. P. candida, *Linn.*

Pholas candidus, Mont. Test. Brit. 24.

In shale, &c., along with the last, frequent.

The mode by which the *Pholades* perforate rocks has long been a subject of dispute, but from recent observations there can be little doubt that it is principally, if not entirely, mechanical; and that it is effected by the soft parts of the animal, namely, the foot and mantle, which appear to have minute crystalline particles, probably siliceous, imbedded in their surface.

Pholas dactylus is included in Mr. Winch's list of Lindisfarne shells, and also in Mr. Hogg's "Natural History of the Vicinity of Stockton," on Mr. Winch's authority. In both cases we think *Pholas candida* has been mistaken for this species. The *Pholas parva* of Donovan, mentioned in the latter work, is the young of *P. crispata.*

120. XYLOPHAGA, *Turton.*

1. X. DORSALIS, *Turt.*

Xylophaga dorsalis, Turt. Brit. Biv. 253, t. 2, f. 4, 5.

From an old piece of oak, apparently part of a root, washed up at the mouth of the Tees.—*Mr. W. Backhouse.* Whitburn.—*Rev. G. C. Abbes.*

121. TEREDO, *Linnæus.*

1. T. NORVEGICA, *Spengler.*

Teredo navalis, Mont. Test. Brit. 527.

This species is occasionally met with in the timbers of old ships, but is scarcely native.

CLASS. TUNICATA, *Lamarck.**

ORDER.—(LES ASCIDIES SIMPLES, *Milne Edwards.*)

FAMILY. PELONAIADÆ, *Forbes.*

122 PELONAIA, *Forbes and Goodsir.*

1. P. CORRUGATA, *Forb. and Goods.*

Pelonaia corrugata, Forb. and Hanl. Brit. Moll. i., 43, t. E., f. 4.

From the fishing boats, Cullercoats, occasionally.—*J. A.*

FAMILY. ASCIDIADÆ, *Forbes.*

123. CYNTHIA, *Savigny.*

C. TUBEROSA, *Macg.* ?

Body irregularly ovate or roundish, pale brown, attached to shells or other marine substances by a broad base: branchial aperture terminal, tubular, much produced and broadly conical

* By J. Alder and A. Hancock.

towards the lower part, where it gradually unites with the outline of the body; anal aperture tubular and prominent, situated about one-third down the side; both are quadripartite and of a deep red colour. Outer tunic very thick, tough, and rugose, tuberculated and furrowed in an irregular manner; inside smooth and shining. Inner tunic bluish white, streaked with rose-colour at the apertures, and tinged with red in the centre from the ovaries shining through; these last are round granulated protuberances of a red colour, studding the inside of the tunic in longitudinal rows. Branchial sac, with about twelve strong longitudinal folds, and finely reticulated, without papillæ at the intersections. Tentacular filaments, round the entrance to the branchial cavity, simple and linear. Length, two inches; breadth, an inch and a half.

Cynthia tuberosa, Macg. Moll. Aberd. 311; Forb. and Hanl. Brit. Moll. i. 37.

From the fishing boats at Cullercoats, not uncommon.

The characters here given agree pretty well with the *Cynthia tuberosa*, Macg., and we therefore follow the opinion of Professor E. Forbes in considering ours to be a larger state of that species. We have never, however, seen the tubercles so prominent as Professor Macgillivray describes; and the tubular apertures are very conspicuous when the animal is expanded in sea-water: when removed from that element, they, as well as the whole body, contract greatly, in which state they agree better with Professor Macgillivray's description. This species is often covered with corallines and other small marine bodies, and the *Modiola marmorata* is usually found imbedded in its skin.

2. C. CORIACEA, *Ald. and Hanc.*

Body elongated and cylindrical when extended, nearly hemispherical when contracted, of a pale brownish colour, attached to shells, &c., by a broad base, equalling the diameter of the body. Apertures, terminal, approximating, tubular, nearly equal in size, pale, with a faint line of red round the margins. Outer tunic rough, coriaceous, transversely wrinkled and longitudinally furrowed, covered with minute granules. Inner tunic thin, white, sometimes spotted with brown. Ovaries large and white, lining

the tunic with cylindrical convolutions. Branchial sac thin, with about ten longitudinal folds, and finely reticulated ; the longitudinal fibres strongest. Length nearly an inch ; breadth half an inch.

From the fishing boats at Cullercoats, with the last but less common.—*J. A.*

This species differs from the preceding in having both the apertures terminal, and placed near together, as well as in the minute granulations of the surface. It is capable of greater contraction and elongation than most of the other species, and in the two states might be taken for different animals. It has sometimes small corallines attached, but we have not observed any *Modiolæ* imbedded in its skin.

3. C. AMPULLA, *Brug.*

Cynthia ampulla, Forb. and Hanl. Brit. Moll. i. 40.

Brought in on the fishemen's lines at Cullercoats.—*J. A.*

This species which has hitherto been overlooked as British, is not uncommon with us. It is unattached and cased in a thick coat of sand, held together by the long slender hairs of its tunic, assisted by a glutinous secretion. Its proper characters cannot be observed without removing the sand, which is sometimes equal in bulk to the whole of the animal. The long cylindrical tubes are often beautifully streaked and spotted with carmine.

4. C. RUSTICA, *Linn.*

Cynthia rustica, Forb. and Hanl. Brit. Moll. i. 39.

Common on stones, and at the roots of the larger sea-weeds, between tide-marks, and a little beyond.

A small, lenticular, red *Cynthia*, which we have always taken for the young of this species, is common in similar situations. This, we believe, is the *C. grossularia* of Van Beneden (Forb. and Hanl. Brit. Moll. i. 40).

124. MOLGULA, *Forbes.*

1. M. ARENOSA, *Ald. and Hanc.*

Body nearly globular, hyaline, rather glossy, smooth to the naked eye, but appearing very slightly rugose under a magnifier; unattached. Apertures very close together, sublateral, tubular, or

conical, but not much produced, and when retracted, so completely on a level with the surface, as to be imperceptible. Outer tunic soft, transparent, and colourless, shewing the viscera and branchiæ very distinctly within : the intestine is seen forming a yellowish brown coil ; a bright reddish spot indicates the stomach ; and the ovaries form an opake white central mass on each side. The inner tunic is very thin, soft, and colourless. The branchial sac has about twelve deep and broad longitudinal folds, which are divided by transverse bars into small cells, opening externally towards the tunic, and, when viewed through its transparent walls, appearing like rows of chains or festoons ; the intermediate reticulations are small. The aperture to the branchial sac is fringed internally with a circle of beautifully branched yellow tentacles. Diameter about three-quarters of an inch.

Molgula tubulosa, Forb. and Hanl. i. 36, t. C, f. 5.

Brought up plentifully on the fishermen's lines at Cullercoats. It is always encrusted with sand, but not so deeply as *Cynthia ampulla*, and there is often a transparent spot, free of sand, at one side, which gives to these little balls somewhat the appearance of detached *eyes*. They are so abundant in some parts of the fishing grounds that they are caught by the hooks in considerable numbers, to the great annoyance of the fishermen.

We cannot find any description agreeing with this species. It appears to us to come nearest to the *Ascidia punum* of Müller, but our friend, Professor E. Forbes, who has seen our drawings of it, refers it to *Ascidia tubularis* of the "Zoologia Danica." That species, however, is described to be greenish, opake, and verrucose,—while ours is hyaline, transparent, and smooth. It is also stated to be attached by its base to the roots of Fuci : ours is always free. We have thought it best, therefore, to consider it as undescribed, and to give such details of it as may serve for its recognition in future.

M. CITRINA, *Ald. and Hanc.*

Body convex, ovate, attached to stones in a diagonal direction by a broad base; nearly smooth, yellowish and semi-transparent, with a deep yellow or orange-coloured patch at the lower end from the viscera appearing through. Branchial aperture sub-

terminal slightly tubular, tuberculated or echinated, and divided at the top into six pointed segments. Anal aperture about one-third down the body on the upper side, sub-tubular, slightly tuberculated and divided into four segments, shorter than those of the branchial aperture. Length three-eighths of an inch.

On the under side of stones between tide-marks, Cullercoats and Whitley, not common.

125. ASCIDIA, *Linnæus.*

*** Cylindrical or rounded, and partially attached.**

1. A. INTESTINALIS, *Linn.*

Ascidia intestinalis, Forb. and Hanl. Brit. Moll. i. 31.

Not uncommon between tide-marks; laterally attached to stones at its posterior extremity. It inhabits various depths, and is occasionally brought in on the fishing lines. Those from deep water are larger than the shore variety, and of a greenish yellow colour. This species is flaccid, when out of water, and very contractile.

2. A. SORDIDA, *Ald. and Hanc.*

Body ovate, of a dull semi-transparent yellowish white, nearly smooth, but coarse and with an uneven surface; attached by a narrow base. Apertures terminal and not far apart, papillose or very slightly tubular, more or less echinated or tuberculated; the branchial aperture eight-cleft, the anal six-cleft, with a red eye-spot at the base of each division. Outer tunic transparent, vitreous, and colourless, rather tough, with very little power of contraction or expansion. Inner tunic about one-third less than the outer one, soft, yellowish, and generally very much blotched and spotted with crimson, towards the upper end. Branchial sac, with small even reticulations a little thickened at the intersections. Circle of tentacular filaments simple and slender. Length about two inches; breadth an inch and a quarter; but very variable in size.

This is one of the commonest *Ascidiæ* brought in on the fishing lines at Cullercoats. It is usually attached to corallines; occasionally to shells and other substances. In its young state it is gregarious, and is found in clusters on *Gemellaria loriculata*,

and sometimes inside dead bivalve shells. It is then very transparent and hyaline. *Modiola marmorata* is occasionally found imbedded in the older individuals. This species may be the *Ascidia prunum* of Macgillivray but not of Müller.

3. A. VIRGINEA, *Müll.*

Ascidia opalina, Macg. Moll. Aberd. 312.

Ascidia virginea, Forb. and Hanl. Brit. Moll. i. 33, t. C, f. 4.

From the fishing boats at Cullercoats, rare.

The hyaline transparency of the outer tunic, and the bright yellow and red markings of the inner, render this one of the most attractive of our *Ascidiæ.* The anal tube is much the longest; an unusual circumstance in this family.

4. A. VITREA, *Van Beneden ?*

Ascidia vitrea, Forb. and Hanl. Brit. Moll. i. 35.

On small sea-weeds brought in by the trawl-boats from a few fathoms water.—*J. A.*

We have not had the opportunity of seeing Professor Van Beneden's figures of *Ascidia vitrea,* but our specimens agree very well with the description of it in the "History of British Mollusca," with the addition that the inner tunic is spotted with yellow, and there is a yellow ring near the entrance to the branchial sac. We had at first thought that this might possibly be the young of the last, but it differs in being more ovate, and in having the anal aperture small and little prominent, as well as in the absence of red markings on the inner tunic.

5. A. ALBIDA, *Ald. and Hanc.*

Body ovate, white, transparent, and slightly tuberculated; attached laterally by a narrow base to small sea-weeds. Branchial aperture lateral or subterminal, large but not very prominent, the margin divided into eight points with intermediate red ocelli. Anal aperture a little distant from the other, and nearly half way down the body on the upper side; largish, and little prominent, with six red ocelli. Outer tunic hyaline and colourless, covered with distant small tubercles. Inner tunic, transparent white with bluish lines on the upper part; below, opake white slightly spotted with yellow. There is a large opake white spot on the ganglionic prominence between the

apertures, near which are a few small reddish marks. Length, half an inch ; breadth, one-third less.

On small sea-weeds brought in by the trawl-boats, with the last, not uncommon.—*J. A.*

Professor E. Forbes thinks this species may be a variety of *Ascidia scabra*, Müll., but the latter has the apertures terminal and rather prominent, the inner tunic of a uniform red, and the outer tunic closely covered with small granules ; characters which do not agree with our animal. The opake white spot between the apertures appears to be permanent, and a good distinctive character in this species.

** Depressed, and attached through their whole length.

6. A. DEPRESSA, *Ald. and Hanc.*

Body oblong ovate, very much depressed, pale green ; attached laterally through its entire extent by a distinct expansion or disc, surrounding the whole. Apertures distant : the branchial one terminal, not much produced, and divided into eight points, with intermediate red ocelli ; anal aperture about two-thirds down the body on the left side, with six segments and intermediate ocelli. Outer tunic transparent, granulated or tuberculated on the upper surface, the granules sometimes a little incrusted with brown ; under or attached side, smooth and very thin. Inner tunic one-third less than the outer, yellowish green, of a deeper colour and sometimes inclining to orange in the lower part. The intestine is often very conspicuous, forming a dark sigmoid coil, but this is more or less the case in all the transparent species. Branchial sac finely reticulated with tubercles at the intersections. Length, nearly an inch.

Common; attached to the underside of stones among the rocks at Cullercoats and Whitley.

This species comes very near to the *Ascidia orbicularis* of Müller (Zool. Dan. t. 79, f. 1, 2), but differs in the position of the apertures, which in that species are represented to be rather near together at the anterior end, while in ours they are widely separated.

7. A. ELLIPTICA, *Ald. and Hanc.*

Body elliptical, a little convex on the upper side, and flat beneath, of a dull and sub-opake brownish or yellowish white;

attached through its whole length by a rather inconspicuous disc. Branchial aperture not quite terminal, at the anterior end, papillose, very little elevated, and divided into eight tubercular segments. Anal aperture situated a little below the branchial one on the left side, not prominent, with six tubercles. Outer tunic tough, sub-opake, nearly smooth but rather coarse ; inner tunic opake white or flesh-coloured with a few spots of red between the apertures. The red ocelli of the apertures, which are scarcely visible outside, are distinct in the inner tunic. Branchial sac reticulated, with slender papillæ at the intersections of the larger meshes. Length three-quarters of an inch ; breadth about one-third less.

Attached to the underside of stones, within tide-marks, Cullercoats, not common.—*A. H.*

Professor E. Forbes has referred our drawings of this species to *Ascidia prunum* of Müller, but in this opinion we cannot agree. *A. prunum* is described as rounded, lax, hyaline, and very pellucid, and is a free or slightly attached species dwelling in mud. It consequently does not belong to this division of the genus.

8. A. PELLUCIDA, *Ald. and Hanc.*

Body depressed, hyaline, subtriangular, attached laterally by a broad disc. Branchial aperture terminal, wide and tubular, divided into eight segments with red ocelli. Anal aperture situated a little below it on the left side, tubular and curved inwards towards the upper surface, with six ocellated segments. Outer tunic smooth, coriaceous, colourless and perfectly transparent. Inner tunic not above one-half the size of the outer one, opake yellowish white, inclined to red on the lower part. Length half an inch.

Under stones within tide-marks, Cullercoats, rare,—*A. H.*

ORDER.—(LES ASCIDIES SOCIALES, *Milne Edwards.*)

FAMILY. CLAVELLINIDÆ, *Forbes.*

126. CLAVELLINA, *Savigny.*

1. C. LEPADIFORMIS, *Müll.*

Clavellina lepadiformis, Forb. and Hanl. Brit. Moll. i. 26, t. E, f. 1.

Under stones at low-water mark, rare. St. Mary's Island.—*A. H.*

ORDER.—(LES ASCIDIES COMPOSÉES, *Milne Edwards.*)

FAMILY. BOTRYLLIDÆ, *McLeay.*

127. APLIDIUM, *Savigny.*

1. A. FICUS, *Linn.?*

Aplidium ficus, Forb. and Hanl. Brit. Moll. i. 11?

Under stones among the rocks at Cullercoats, rare.—*A. H.*

The specimen we refer, with doubt, to this species, formed an irregular lobed mass of a brownish colour, with the animals thickly disposed through it, without apparent pattern. Longest diameter nearly two inches.

2. A. FALLAX, *Johns.*

Aplidium fallax, Johns. in Loud. Mag. Nat. Hist. vii. 15, f. 4; Forb. and Hanl. Brit. Moll. i. 11.

On sea-weeds, in pools between tide-marks, at Cullercoats, rare.—*J. A.*

128. SIDNYUM, *Savigny.*

1. S. TURBINATUM, *Sav.?*

Sydneum turbinatum, Flem. Brit. Anim. 469?

A species, which we had always taken to be this, is not rare on our coast, but it differs from that figured in Forbes and Hanley's "British Mollusca." It is inversely conical, sometimes adhering by a narrow base, and is of an orange-red colour, with the animals vertically and concentrically arranged: their branchial apertures are eight-cleft. The masses are of different sizes, from a quarter to half an inch high, erect, and frequently clustered.

129. POLYCLINUM, *Savigny.*

1. P. AURANTIUM, *M. Edw.?*

Polyclinum aurantium, Forb. and Hanl. Brit. Moll. 14, t. A, f. 3.

On the under side of stones between tide-marks at Cullercoats rather rare.—*A. H*

Our specimens are paler than those described by M. Milne Edwards, being of an ochreous yellow, with only a tinge of orange at the sides. The mass frequently forms a cluster of different sized flattened balls. The general apertures, irregularly disposed over the surface, are large and prominent.

130. LEPTOCLINUM, *Milne Edwards.*

1. L. PUNCTATUM, *Forbes.*

Leptoclinum punctatum, Forb. and Hanl. Brit. Moll. i. 18.

On the under side of stones between tide-marks, Cullercoats and Whitley, not uncommon.

131. BOTRYLLUS, *Gærtner.*

1. B. SCHLOSSERI, *Pallas.*

Botryllus Schlosseri, Forb. and Hanl. Brit. Moll. i. 19, t. A, f. 7.

Incrusting the under side of stones, and on the stems of the larger Fuci, between tide-marks and a little beyond, common.

This species may usually be known by a red spot on the thorax of each individual composing the stars, though in one or two instances within our knowledge it has been wanting. The general envelope is thick and rather tough.

2. B. RUBENS, *Ald. and Hanc.*

General envelope thin and transparent, dull brown, with numerous opake yellow granules. Individuals forming circles, or stars, of from four to fifteen, generally averaging seven or eight; their colour is various shades of red, from reddish-yellow to dark brick-red: there is usually a circle of dark red round the branchial aperture, and at a little distance from it, and a streak of the same down the centre of the thorax; the remainder of the body is pale red or yellowish, thickly sprinkled with opake yellowish-white spots. General aperture of each system, rather small. The stars are smaller, and not so closely set as in the last species.

On the under side of stones between tide-marks, Cullercoats, frequent.

We have occasionally seen the central red line of the body so

much diminished that it leaves little more than a spot, and in that case the species might be taken for the last ; but it may always be known from it by the thinness of the general envelope and the more variegated reddish colour of the inclosed animals.

3. B. VIRESCENS, *Ald. and Hanc.*

General envelope moderately thick, olive-brown coloured, sprinkled with yellow spots. Individuals forming circles of from six to twelve. Colour grass-green, varying to greenish yellow, and occasionally to pale grey ; the colour is in most cases confined to the lower part of the animal, the upper portion being so nearly the colour of the envelope as to be with difficulty distinguished from it. Branchial apertures large, with a faint red margin ; the tentacular filaments very conspicuous within them, of a pale yellowish colour. When magnified, the colour of the body is shown to be formed of a copious sprinkling of opake spots, mostly confined, as before stated, to the lower part of the animal, but sometimes extending round the disc. Common central apertures largish, margined with red.

Not uncommon on the under side of stones within tide-marks, along with the last. The arrangement of the markings distinguishes it from the *B. smaragdus* of Milne Edwards.

4. B. POLYCYCLUS, *Sav.* ?

General envelope thin, dull greenish brown. Individuals forming circles of from 4 to 9 each, generally of a purplish hue, occasioned by a spotting of claret-colour and blue intermixed with spots of opake white ; the white usually forming one or two large blotches in the centre of the body on a dark blue ground and there is also a circle of white, or sometimes reddish, spots round the disc. General apertures rather small; the edges thickly sprinkled with white and blue.

Botryllus polycyclus, Forb. and Hanl. Brit. Moll. i. 21.

On the under side of stones within tide-marks, not rare, but less frequent than the three preceding.

5. B. CASTANEUS, *Ald. and Hanc.*

General envelope very thin and pellucid, with a few scattered brown marks and black punctures on the margin. Individuals large, placed in irregular circles of from 6 to 8, of a chesnut

colour, irregularly blotched with purple-brown, and minutely sprinkled with opake white. Branchial aperture small, general aperture moderate. Stars rather far apart, and surrounded with a few large opake yellowish white globular bodies.

On the under side of stones in pools between tide-marks, Cullercoats, rare.—*A. H.*

The envelope of this species is thinner than in any other we are acquainted with, and, when removed from the stone, is extremely flaccid. The patches are large, being sometimes 5 inches across.

132. BOTRYLLOIDES, *Milne Edwards.*

1. B. Leachii, *Sav.* ?

Botrylloides Leachii, Forb. and Hanl. Brit. Moll. i. 23 ?

The species we now refer, though with considerable doubt, to *Botryllus Leachii* of Savigny, is common among the rocks at Cullercoats and Whitley, encrusting the under side of stones in largish patches. The general envelope is brownish, and the individuals are usually of a nearly uniform ochreous yellow, forming large brain-like folds. The colour occasionally varies to brick-red, and even to a purplish hue. There may possibly be more than one species included in this, but, hitherto, we have not been able to detect any difference among them excepting in colour.

2. B. radiata, *Ald. and Hanc.*

General envelope yellowish olive, with yellow granules.—Individuals rather small, broadly pear-shaped, pale ochreous yellow or straw colour, spotted with white, and having a paler rim round the branchial aperture, with rays diverging from it and uniting into a disc beyond, giving a petaloid or wheel-like appearance to it. A darkish line runs down the thorax. The systems are arranged in much shorter and more compact folds then in the last; some parts occasionally assuming the appearance of a circular arrangement. The common apertures are usually situated at no great distance from each other.

On the under side of stones, among the rocks at Cullercoats and Whitley, frequent.

The smaller size more varied markings, and shorter and more rounded convolutions, distinguish this species from the last.—The wheel-like markings ally it to the *B. rotifera* of Milne-Edwards, but the colour never approaches to red, and the folds of *B. rotifera* appear more elongated than in ours. In this respect our species approaches more nearly to the arrangement of *B. albicans.*

3. B. ALBICANS, *M. Edw.*

Botrylloides albicans, Forb. and Hanl. Brit. Moll. i. 24, t. A, f. 8.

On the under side of stones between tide-marks, St. Mary's Island.—*A. H.*

4. B. RAMULOSA, *Ald. and Hanc.*

General envelope colourless, pellucid, with a few pale yellow spots on the margin. Systems of individuals winding, much involved ; and having a broad cream-coloured belt down the centre, following the sinuations. Animals of an obscure brownish yellow, with the lower half pale opake yellow.

On the under side of stones in pools between tide-marks at Cullercoats, rare.—*A. H.*

This species, which is in patches of upwards of an inch and a quarter across, is at once distinguished from *B. Leachii* by the opake belt of cream-colour that passes along the centre of the various systems of animals.

The above attempt to describe the TUNICATA of our coast, imperfect as it is, may serve as a ground-work for future investigations. Some other forms are known to us which we have not ventured to describe, though we have seen sufficient to convince us that many species yet remain to reward the labours of future enquirers. The compound species are extremely difficult to make out, both on account of their great similarity, and because the same species, and even the same individual, is very apt to vary under different circumstances.

INDEX TO THE GENERA.

	Page.
Achatina,	38
Acme,	41
Actæon,	29
Amphidesma, *v.* Syndosmya.	
Amphisphyra,	28
Anatina,	97
Ancula,	18
Ancylus,	44
Anodon,	82
Anomia,	75
Aplidium,	109
Aplysia,	24
Aporrhais,	61
Arca,	79
Arion,	29
Artemis,	84
Ascidia,	105
Astarte,	86
Auricula *v.* Conovulus.	
Azeca,	38
Balæa,	39
Bithinia,	45
Botrylloides,	112
Botryllus,	110
Buccinum,	66
Bulimus,	38
Bulla,	27
Bullæa,	24
Cæcum,	74
Capulus,	71
Cardium,	83
Carychium,	41
Cerithium,	60
Chemnitzia,	48
Chiton,	72
Clausilia,	39
Clavellina,	108
Conovulus,	41
Corbula,	96
Coriocella, *v.* Lamellaria.	
Crenella,	82
Cryptodon,	91
Cyclas,	92
Cynthia,	101
Cypræa,	67
Cyprina,	86
Dendronotus,	19
Dentalium,	74
Donax,	87
Doris,	15
Doto,	20
Eledone,	13
Emarginula,	70
Eolis,	20
Eulima,	46
Fusus,	62
Goniodoris,	17
Helix,	33
Idalia,	18
Kellia,	93
Lacuna,	57
Lamellaria,	70
Leda,	79
Leptoclinum,	110
Lepton,	93
Lima,	78
Limapontia,	23
Limax,	31
Limnæa,	42
Littorina,	55
Loligo,	14
Lottia,	72
Lucina,	91
Lutraria,	98
Lyonsia,	98
Mactra,	90
Margarita,	60
Modiola,	81
Molgula,	103
Montacuta,	95
Murex,	66
Mya,	98
Mytilus,	80
Nassa,	67
Natica,	68
Neæra,	96
Neritina,	60
Nucula,	79
Octopus, *v.* Eledone.	
Odostomia,	50
Ostrea,	76
Paludina, *v.* Bithinia.	
Panopæa,	99
Patella,	71
Pecten,	76
Pectunculus,	78
Pelonaia,	101
Pholas,	100
Physa,	43
Pisidium,	92
Planorbis,	43
Pleurobranchus,	24
Pleurotoma,	61
Polycera,	17
Polyclinum,	109
Psammobia,	89
Pullastra,	86
Puncturella,	70
Pupa,	39
Purpura,	66
Rissoa,	53
Saxicava,	100

	PAGE.
Scalaria,	47
Scrobicularia,	90
Sepia,	15
Sepiola,	13
Sidnyum,	109
Skenea,	59
Solen,	99
Stylifer,	45
Succinea,	33
Syndosmya,	90
Tellina,	88
Terebratula,	74
Teredo,	101
Thracia,	97
Trichotropis,	66
Triopa,	17
Tritonia,	19
Trochus,	59
Turbo *v.* Littorina.	
Turritella,	60
Turtonia,	95
Unio,	82
Valvata,	45
Velutina,	69
Venus,	84
Vertigo,	40
Vitrina,	33
Xylophaga,	101
Zua,	38

ABBREVIATIONS OF AUTHORS' NAMES.

Ald. and Hanc., Alder and Hancock.
Bouch. Chant., Bouchard Chantereaux.
Brod., Broderip.
Brug., Bruguière.
Chemn., Chemnitz.
Cuv., Cuvier.
Desh., Deshayes.
Dillw., Dillwyn.
Don., Donovan.
D'Orb., D'Orbigny.
Edw. (M.), Milne Edwards.
Fab., O. Fabricius.
Fér., Férussac.
Flem., Fleming.
Forb. and Hanl., Forbes and Hanley.
Gmel., Gmelin.
Jeff., Jeffreys.
Johns., Johnston.
Lam., Lamark.
Leuck., Leuckart.
Linn., Linnæus.
Macg., Macgillivray.
Mich., Michaud.
Mont., Montagu.
Müll., Müller.
Penn., Pennant.
Phil., Philippi.
Pult., Pulteney.
Sow., Sowerby.
Thomp., Thompson.
Turt., Turton.

NEWCASTLE: PRINTED BY T. AND J. HODGSON, UNION-STREET.